UNIVERSIDADE NOVA DE LISBOA,
NOVA MEDICAL SCHOOL / FACULDADE DE CIÊNCIAS MÉDICAS

TITLE: DEPRESSION SCREENING IN PRIMARY CARE IN THE REPUBLIC OF TRINIDAD AND TOBAGO

NAME: DR. SHERESE ALI

DESIGNATION: Master's dissertation in International Mental Health Policy and Services

SUPERVISOR: DR. GRAÇA CARDOSO

YEAR OF COMPLETION OF THE DISSERTATION: 2017

ACKNOWLEDGEMENTS

I would like to extend sincere gratitude to Dr. Waly Mohan, Dr. Victor Terapalli and Dr. Candice Solomon for their support, direction and permission to conduct this research at the primary care clinics of the North Central Regional Health Authority, Trinidad, W.I.

I would like to thank the ethics committees of the Caribbean Public Health Agency and the Nova University of Lisbon for their expedited reviews, critical comments and valuable insights in assuring and preserving the ethical integrity of this research.

I would like to thank all the primary health care doctors and patients who agreed to participate in this research.

I would like to thank my supervisor Dr. Graça Cardoso for her guidance in preparing this dissertation and ensuring that it meets the quality and standards of the Masters Committee.

I extend my sincere gratitude to all the instructors of the Nova University's Masters in International Mental Health Policy and Services for their invaluable teaching and the knowledge I have gained throughout the course.

SUMMARY

The World Health Organization (WHO) predicts that unipolar depression will be the second leading cause of disability in the world by the year 2020. Amongst their many recommendations to address this problem are mental health training in primary health care and the integration of mental health into primary care. Identified areas of policy development such as health promotion and case detection at this level would necessarily entail adequate education and screening at a primary care level. The study sought to investigate the rate of routine screening for depression in clinical practice, and the attitudes towards mental health amongst primary health care physicians in Trinidad and Tobago using a physician attitude survey. It used an observational, single blind design. The principal investigator administered an independent screen for depression on all patients to determine the base rate of positive depression screen. Data and statistical analyses were stratified based on patient gender, individual physician and clinic site. Six clinic

sites within 1 regional health authority in the island were sampled. 119 patients and 11 primary health care physicians participated. Of the 119 patients 29 had a positive screen for depression based on a PHQ-2 administered by the investigator. The depression screening rate (fraction of patients routinely screened by the physician), and therefore their detection rate (number screened positive by the physician, divided by the total number of positive screens according the PHQ-2) were very low, 9/119 (7.6%) and 2/29 (6.9%), respectively. The only significant correlation with screening by primary care physicians was by clinic site. Overall physicians demonstrated a positive attitude towards mental health and 10/11 physicians felt they needed more training in mental health. The small sample size and restriction to one regional health authority limits generalizability of the findings. Nevertheless, the depression screening rate reflects those in similar studies in both developing and developed countries.

Keywords: Primary health care, depression, mental health, screening, Caribbean

RESUMO

A Organização Mundial da Saúde (OMS) prevê que a depressão unipolar seja a segunda principal causa de incapacidade no mundo até o ano de 2020. Entre suas muitas recomendações para resolver este problema incluem-se formação em saúde mental nos cuidados de saúde primários e integração da saúde mental nos cuidados primários. As áreas identificadas de desenvolvimento de políticas, tais como a promoção da saúde e deteção de casos a este nível implicariam necessariamente educação e triagem adequada ao nível dos cuidados primários. O estudo procurou investigar a taxa de triagem de rotina para depressão na prática clínica, e as atitudes em relação à saúde mental pelos médicos de cuidados primários de saúde em Trinidad e Tobago usando um questionário de atitude médica. Usou-se um protocolo de observação simples-cego. O investigador principal administrou uma escala independente de depressão (PHQ-2) em todos os pacientes para determinar a taxa básica de depressão. Os dados e as análises estatísticas foram estratificadas com base no género do paciente, no médico individual e na clínica. Seis clínicas localizadas dentro de uma autoridade regional de saúde na ilha de Trinidad foram amostradas. Participaram 119 doentes e 11 centros de cuidados de saúde primários. Dos 119 doentes 29 tinham uma avaliação positiva para a depressão com base no score da escala PHQ-2 administrado pelo investigador. A taxa de triagem de depressão (fração de pacientes avaliados rotineiramente para depressão pelo médico) e, portanto, a taxa de deteção (número positivo para a depressão pela avaliação do médico, dividido pelo número total de telas positivas de acordo com o PHQ-2) pelos médicos de cuidados primários foram muito baixos 9/119 (7,6%) e 2/29 (6,9%), respetivamente. A única correlação significativa com a triagem por médicos de cuidados primários foi com o local da clínica. Os médicos mostraram globalmente uma atitude positiva em relação à saúde mental e 10/11 sentiram que precisavam de mais

formação nessa área. O pequeno tamanho da amostra e a restrição a apenas uma autoridade regional de saúde limita a generalização dos resultados. No entanto, a taxa de triagem de depressão reflete as de estudos semelhantes, tanto em países em desenvolvimento como desenvolvidos.

Palavras-chave: Cuidados de saúde primários, depressão, saúde mental, triagem, Caribe

RESUMEN

La Organización Mundial de la Salud (OMS) prevé que la depresión unipolar será la segunda causa principal de discapacidad en el mundo en el año 2020. Entre sus muchas recomendaciones para hacer frente a este problema son indicadas la formación en salud mental en la atención primaria y la integración de la salud mental en atención primaria. Areas de desarrollo de políticas identificadas, por ejemplo, la promoción de la salud y la detección de casos en este nivel, implicarían necesariamente la educación y el cribado suficiente a nivel de atención primaria. El estudio apuntó de investigar la tasa de cribado de la depresión y las actitudes hacia la salud mental entre los médicos de atención primaria de salud en Trinidad y Tobago usando una encuesta de actitud médica. Se utilizó un protocolo de observación ciego simple. El investigador principal administró un instrumento de cribado de la depresión (PHQ-2) en todos los pacientes en el estudio para determinar la tasa de base positiva para la depresión. El análisis de los datos se estratificó en función del sexo del paciente, del médico individual y de las clínicas. Se tomaron muestras de seis clínicas dentro de una Autoridad Regional de Salud en la isla. Un total de 119 pacientes y 11 médicos de atención primaria participaron. 29 de los 119 pacientes tenían un resultado positivo para la depresión basada en una PHQ-2 administrado por el investigador. La tasa de cribado de la depresión (fracción de pacientes rutinariamente revisada para la depresión por el médico) y, por lo tanto, la tasa de detección (número de exámenes positivos por el médico, dividido por el número total de exámenes positivos según el PHQ-2) fueran muy bajas, 9/119 (7,6%) y 2/29 (6,9%) respectivamente. La única correlación significativa con el cribado de la depresión por los médicos de atención primaria fue por el centro clínico. En general los médicos de atención primaria demostraron una actitud positiva hacia la salud mental y 10/11 sintieron que necesitaban más capacitación en salud mental. El tamaño pequeño de la muestra y la restricción a una Autoridad Regional de Salud limita la generalización de los resultados. Sin embargo, la tasa de cribado de la depresión refleja las de estudios similares, tanto en los países desarrollados como en los países en desarrollo.

Palabras clave: Atención primaria de salud, depresión, salud mental, cribado de la depresión, Caribe

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

Figures

Tables

LIST OF ACRONYMS

ADD	Any Depressive Disorder
AIDS	Acquired Immunodeficiency Syndrome
AIMS	Assessment Instrument for Mental Health Systems
CARPHA	Caribbean Public Health Agency
CEO	Chief Executive Officer
CL	Consultation-liaison
DHF	District Health Facility
DSM	Diagnostic and Statistical Manual
ERHA	Eastern Regional Health Authority
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
GSHS	Global School-Based Student Health Survey
HbA1c	Glycosylated hemoglobin
HD	Heart disease
HIV	Human Immunodeficiency Virus
MDD	Major Depressive Disorder
MH	Mental Health
mhGAP	mental health Gap Action Program
MHO	Mental Health Officer
MNS	Mental, Neurological and Substance Use Disorders
MoH	Ministry of Health
MVP	Mitral valve prolapse
NCRHA	North Central Regional Health Authority
NGOs	Non-Governmental Organizations
NWRHA	North West Regional Health Authority
OR	Odds Ratio
OT	Occupational Therapy
PAHO	Pan American Health Organization
PHC	Primary Health Care
PHCC	Primary Health Care Centre
PHCP	Primary Health Care Physician
PHQ-2	Patient Health Questionnaire-2 items
PHQ-9	Patient Health Questionnaire-9 items
PMR	Physical Medicine and Rehabilitation
PPV	Positive Predictive Value
PTSD	Post Traumatic Stress Disorder
RHA	Regional Health Authority

SD	Standard Deviation
SGA	Second-Generation Antipsychotic
SLP	Speech and Language Pathology
SSRI	Selective Serotonin Reuptake Inhibitor
STDs	Sexually Transmitted Diseases
SW	Social Worker
SWRHA	South West Regional Health Authority
TCA	Tricyclic Antidepressant
TRHA	Tobago Regional Health Authority
UN	United Nations
USPSTF	United States Preventive Services Task Force
WHO	World Health Organization

1. INTRODUCTION

a. Mental Health Framework: Services, Policy, Legislation and Budget

The Republic of Trinidad and Tobago is the most southerly island of the Caribbean. It has an area of 5,128 sq. km. (1,980 sq. mi.). Trinidad 4,828 sq. km. (1,864 sq. mi.) and Tobago 300 sq. km. (116 sq. mi.). The capital city, Port of Spain, has a metropolitan population of 310,000 inhabitants. The 2014 United Nations (UN) official estimate of the total population of Trinidad and Tobago is 1, 344,234[1]. The literacy level is 98.6%. The main language is English and Spanish is the second official language. Trinidad and Tobago was categorized as a middle-income country based on World Bank 2004 criteria and has been re-categorized as high income in the WHO Mental Health Atlas Country Profile 2014[2].

Services

The country's history has had a significant influence in the practice of psychiatry. Over the past 5 centuries colonizing forces and cultures have led to the emergence of several culturally-based treatments. The current practice of psychiatry is therefore a blend of science and traditional practice based on religion, superstition and folk medicine. The history was summarized by Maharaj and Parasram in 1999[3]:

"Under British rule, the march of Western psychiatry closely paralleled the management and the treatment of the insane in England. After 50 years of British colonization, the first ordinance was passed in 1849 for the custody at the Royal Gaol of insane persons charged with offences. In 1858, the Belmont Psychiatric Asylum was opened for the accommodation of 80 persons and in 1900 the St Ann's Asylum, that currently houses 900 patients. The first half of the twentieth century was a period of aggressive physical methods of treatment utilizing bromide mixtures, hyperthermia for syphilis, insulin coma therapy, electronarcosis and transorbital leucotomy. This was discontinued following the introduction of psychotropic drugs in 1954. Following independence from Britain in 1962, a number of plans for the development of psychiatric services were submitted to the Government, but few were implemented. However, the, following plans have been implemented: the creation of Psychiatric Units at the two General hospitals, a Sectorization Plan, a Mental Health Act and the recent creation of Regional Health Authorities with a new Mental Health Plan."

Since that publication, one of the two general hospitals referred to now has a psychiatric unit. There are now 3 more general hospitals, including one in Tobago, of which 2 have a psychiatric unit. The sectorization plan was realized in the creation of Regional Health Authorities (RHAs). There are now 5 RHAs, 4 in Trinidad (North West, North Central, Eastern and South West RHAs), and 1 in Tobago (Tobago RHA), Figure 1.

Figure 1: Health Sectorization: Regional Health Authorities, Trinidad and Tobago

NWRHA	North West Regional Health Authority
NCRHA	North Central Regional Health Authority
ERHA	Eastern Regional Health Authority
SWRHA	South West Regional Health Authority
TRHA	Tobago Regional Health Authority

There is 1 general hospital in Trinidad providing consultation-liaison (CL) psychiatry services. It also has an inpatient psychiatry unit. The psychiatry hospital in Trinidad, St. Ann's, still exists. There is one general hospital in Tobago which also has an inpatient psychiatry unit.

Each RHA has a head office and a combination of ambulatory and hospital facilities. Table 1 shows the facility distribution among the RHAs:

Table 1: RHAs and facilities in Trinidad and Tobago

RHA	HOSPITALS				PSYCHIATRIC HOSPITALS	DHFs	PHCCs
	General			Specialty			
	Total No.	No. with Psychiatry inpatient unit	No. with CL Psychiatry service				
North West	1	0	0	1 (Gerontology, Oncology, PMR)	1	1	16
North Central	2	1	0	1 (Women's hospital)	0	3	13
Eastern	1	0	0		0	2	16
South West	2	1*	1*		0	3	32
Tobago	1	1	0		0	0	19

*same hospital

DHFs – District Health Facilities

PHCCs – Primary Health Care Centres

PMR – Physical Medicine and Rehabilitation

The authors, Maharaj and Parasram conclude: *"psychiatry today remains well organized with greater emphasis on institutional care than on community care. The revised Mental Health Plan now under consideration has shifted the focus to primary integrated care calling for an active intersectoral collaboration and involvement of individuals, families and communities. It is hoped that the new approach will incorporate both indigenous cures of ancient methods of treatment and modern scientific knowledge. The new millennium promises to be an exciting one for the practice of psychiatry in Trinidad and Tobago."*

While the plan calls for integration of mental health into primary care, the mental health gap action program (mhGAP), and active intersectoral collaboration, progress in this area is significantly lacking. On the Ministry of Health's (MoH's) website, one PHCC is stated as having mhGAP integration,[4] however only one physician at that one PHCC has received training in mhGAP at the current time. The 2007 Assessment Instrument for Mental Health Systems (AIMS) report[5] found that "primary health care staff receive little training in mental health and interaction with mental health services is rare," highlighting the ongoing need for intersectoral collaboration and primary care integration.

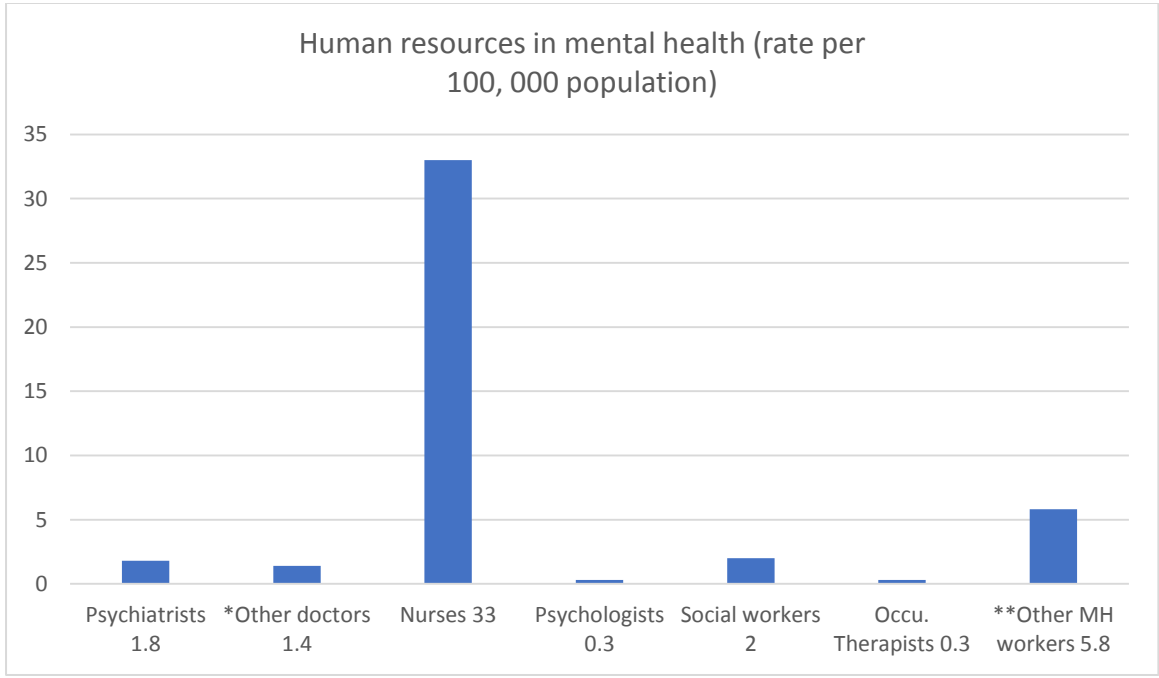
Since the 2007 WHO AIMS report, there have been little further data, research or evidence to monitor any changes or report on any updates from the WHO's recommendations. As a result, the AIMS report, now 9 years old, remains the most updated source of information that would

have been collected in some sort of standardized or rigorous manner. There are henceforth some 2015 newspaper articles[6,7] which present anecdotes and impressions of what changes may or may not have occurred since the 2007 AIMS report. They highlight ongoing issues with lack of attention, political will, interest and priority to mental health, and issues with misperceptions of mental illness. Mental health literacy was opined as a large obstacle in progress. One of the articles[6] stated that "no government in T&T [Trinidad and Tobago] has ever prioritised mental health services and the quality of care lags behind international best practice. So, even though we have signed international conventions, and produced research, what we read sounds much better than what actually obtains." The article highlights the prevalence of mental illness, stating that about 25 per cent of the population are living with mental health issues.

In the second article[7] the Secretary of the Psychiatrists Association of Trinidad and Tobago stated that "one in four people suffer from some form of mental illness. Some of the common disorders treated are depression, relationship problems, anxiety disorders, post traumatic stress disorder, psychotic illnesses, drug-induced disorders and Alzheimer's disease." Issues related to stigma and access to care were mentioned. The issues and statistics on services cited by leaders in the field is reflective of WHO AIMS report data of 2007. The lack of updated information highlights a pressing need for health services research, quality analysis, monitoring and evaluation, and data recording and reporting.

The 2007 WHO AIMS report gives the total number of human resources working in mental health facilities as follows:

Figure 2: Human Resources in Mental Health



*Other doctors: medical doctors not specialised in psychiatry

**Other MH (Mental Health) workers: auxiliary staff, non-doctor/non-physician primary healthcare workers, health assistants, medical assistants, professional and paraprofessional psychosocial counsellors

The most recent survey, conducted between 1997 and 2010[8] stated that there are 0.1 psychiatric hospitals and 74.4 beds in psychiatric hospitals per 100,000 people. No further statistics on mental health services was available.

As a result, the service mapping that is currently quoted in any public domain usually quotes the WHO AIMS report findings: one mental hospital (St Ann's Psychiatric Hospital), 31 outpatient facilities and two community-based psychiatric inpatient units.

Policy and Legislation

The 2007 WHO AIMS report indicates that mental health issues are covered in both criminal and civil legislation. It states that there is a lack of standardized procedures for implementing mental health legislation and that both attorneys and consumers alike are not sufficiently informed about the existing legislation.

The authorizing body for mental health in Trinidad and Tobago is the MoH. According to the 2007 AIMS report there is a mental health policy/plan (Cabinet approved 2000 mental health policy/plan) and an emergency/disaster preparedness plan for mental health. There is a human rights review body in the country.

The first piece of mental health legislation was revised in 1975. At present, it is the only available legal act regulating mental healthcare provision.[6] Leaders in the field have mentioned that despite an old Mental Health Act, the sector can still "work around old legislation."[7]

There are concerns that "There is currently no mental health council or authority overseeing mental healthcare, policy, policing etc. Consequently, there is no co-ordinating body to oversee publication and awareness campaigns in the field of mental health, a much-needed intervention to treat with education as we confront stigma and discrimination."[6]

The Mental Health Act has been updated to December 31st 2015[9] and addresses issues of voluntary and involuntary admission, public trustee, property and affairs of a patient, powers of Psychiatric hospital director, Judge and Court, offences and penalties. Informed consent for treatment is not fully addressed in the act and the only reference to treatment is in Section VI, Article 33:

33. (1) The medical practitioner in charge of the psychiatric ward to which a patient is admitted shall make or cause to be made such examination of the patient as he may consider necessary for determining whether or not the patient is mentally ill and if so, what treatment is required.

(2) Where on examination, a patient is found to be mentally ill and in need of care and treatment he may be—

(a) kept in a psychiatric ward if in the opinion of the medical practitioner in charge of the ward he may be effectively treated in that ward; or

(b) transferred to a psychiatric hospital as an urgent admission patient, a voluntary patient or a medically recommended patient, as the case may be.

(3) Where, pursuant to subsection (2)(b), a person is transferred to a psychiatric hospital, the Psychiatric Hospital Director shall forthwith notify the fact of the transfer to the person by whom the application was made.

(4) A patient in a psychiatric ward shall be in the custody of, and subject to the authority and control of the Psychiatric Hospital Director or the medical practitioner in charge of the ward in the same manner and to the same extent as if he had been a patient in a psychiatric hospital.

Budget

While there is a shift to community-based care stated in the policy, there is slow progress in this arena and the single mental health hospital, St. Ann's, continues to receive most of the mental

health expenditure. The 2007 AIMS report indicate that 4% of health care expenditures by the MoH is devoted to mental health, of which 85% is allocated to the mental hospital. According to the Secretary of the Psychiatrists Association of Trinidad and Tobago, the majority of that 85% goes towards the payment of salaries.[7]

In the newspaper article of 2015[6] the interviewee stated the following:

- "Of the $2.8 billion allocated to the MoH (in 2006) only $103 million or four per cent of healthcare expenditure was devoted to mental health or care of the mind.
- Of the $103 million for mental health, 85 per cent ($97.5 million) were allocated to the St Ann's facility; a mere $6 million covers "all other mental health expenditures.
- The biggest share of mental health expenditure is for payment of salaries/wages.
- Mental health services are not covered by social insurance.
- At the present time, there is no legislative or financial support for employment, provision against discrimination at work, provision for housing, and provision against discrimination in housing for people with mental disorders.

b. Institutional Services

The single psychiatric hospital in Trinidad and Tobago is called St. Ann's Psychiatric Hospital, and is located in the North West RHA. It was built in 1900 as the St. Ann's Asylum[3]. It has 900 beds according to that report in 1999.[3] There are no updated published reports. In 2012, the Health Minister mentioned an occupancy of 822 patients at the time, of which 60% were "social patients" and left at the hospital by family but had no acute psychiatric illness.[10] According to the WHO AIMS report, there are 69 beds per 100,000 population[5]. Most patients have psychotic disorders or mood disorders.[5] Average length of stay is unknown but most people stay for years and are "chronic, long-staying patients."[10] Human rights violations can occasionally be found posted on various forms of social media, news articles and have been reported as anecdotes, but there are no systematized reports or publications.

In general, there is sparse data involving this hospital. A PubMed search yields only one article referencing the hospital.[11] It states there were 85 long-stay patients and 413 admissions during the study year, 1986. Thirty-eight per cent of all admissions for 1986 had schizophrenic psychoses, 34% had alcohol and drug disorders, and 15% had affective disorders. Forty-nine per cent of first admissions had alcohol and drug disorders, and 28% had schizophrenic psychoses. Schizophrenic psychosis was the diagnosis in 61% of those patients who had more than 3 previous admissions. Substance abuse, acute schizophrenic psychosis and chronic schizophrenic psychosis accounted for 72% of admissions for 1986.

Staff composition is 19 psychiatrists, 350 nurses and 22 psychologists.[5] According to the WHO AIMS report, there is at least one psychotropic medication available in each category (antidepressant, antipsychotic, mood stabilizer, anxiolytic and antiepileptic). There is only one article found on mental health prescribing, published in 2002.[12] The authors found that rate of use of older medications, tricyclic antidepressants (TCAs) and phenothiazines, were much higher than use of selective serotonin reuptake inhibitors (SSRIs) and second-generation antipsychotics likely due to higher cost, erratic and inconsistent availability and prescribers' experience and familiarity with the older medications. Use of injectables at this hospital is not known.

Rates of involuntary admission are not readily available. The WHO AIMS report found it was 94%.[5] According to the MoH's website[4]: "Involuntary admission can take place in one of two ways. A mentally ill person can be brought to a treatment centre by friends or family, where an "Urgent Assessment Form" is filled out. The patient is then assessed and undergoes treatment, if appropriate. If it is not possible to bring the patient to a treatment centre, two independent psychiatric doctors must certify that the patient is mentally ill and requires treatment. The Medical Chief of Staff at the St. Ann's Hospital must be informed of this finding in writing. The Medical Chief of Staff then prepares an apprehension order and Mental Health Officers are instructed to apprehend the patient and admit him or her to a mental health facility. Patients who are involuntarily admitted are kept at the facility until health care professionals determine that they can be released safely." Rate of use of chemical and physical restraint is not known. There is little interaction with other medical care staff between St. Ann's hospital and other hospitals. There is no data on morbidity and mortality rates at this hospital.

There is no training or service in CL Psychiatry despite previous attempts to establish a consultation service with the general hospital in this RHA (North West).[13]

c. Psychiatric Services in General Hospitals

Three of the 7 general hospitals have psychiatric units, one in Trinidad's North Central RHA, another in Trinidad's South West RHA, which also has a developing CL psychiatry service, and the third in Tobago's single general hospital.

General hospital in the North Central RHA:

No information could be found on PubMed Index or on the MoH's or hospital's website about the inpatient ward at this facility.

General hospital in the South West RHA:

The official website of the SWRHA[14] provides the following information: Before 1968, persons in need of mental health care throughout the island were admitted directly to the mental hospital. An outpatient psychiatric clinic was commissioned at the general hospital in the South West RHA in 1965 to provide follow up of patients discharged from the mental hospital who live in the southern part of Trinidad. In 1966, a psychiatric in-patient ward was opened at the South West RHA's general hospital as a holding ward until patients were seen and eventually transferred to the mental hospital for in-patient psychiatric care.

In 1974, the Head of the Psychiatric Department was appointed and the department has since grown. Between April 2016 and June 2016, 239 patients were treated in in-patient care, and 4577 were seen at outpatient clinics in 8 communities. Specialized services include child and adolescent mental health, a substance abuse recovery program and a memory clinic. Further searches yield no results on information about bed capacity, staffing, length of stay patients' demographics and diagnostic frequencies.

There are reportedly "routine services in CL Psychiatry" but they are managed by "junior doctors with inadequate training."[15] Referral for suicidal behavior is the most common cause for psychiatric consultation in the general hospitals in the twin island.[15]

General hospital in the Tobago RHA:

This is a 12-bed acute psychiatric inpatient ward. No further information could be found on PubMed Index or on the Ministry of Health or hospital's website about staffing, length of stay, patient demographics and diagnostic frequencies at this facility.

There are reportedly "routine services in CL Psychiatry" but they are managed by "junior doctors with inadequate training."[15] Referral for suicidal behavior is the most common cause for psychiatric consultation in the general hospitals in the country.[15]

d. Community-Based Mental Health Care

The WHO AIMS report of 2007[5] found that there were:

- 31 outpatient facilities, 13 with beds for inpatient care, 1 for children and adolescents
- 3 day-treatment facilities, none for children and adolescents
- 2 community-based inpatient facilities, none for children and adolescents

- 8 community residential facilities, 14.9 beds/places per 100,000 population (therefore approximately 1550 beds), 30 beds (therefore approximately 2%) reserved for children and adolescents

From a review of the MoH website[4] 34 outpatient facilities can be counted throughout the country. Most (20) are described as outpatient psychiatry clinics where assessment and treatment occurs. Patients may attend by walk-in, self-referral or physician-referral. In Tobago, some non-governmental organizations (NGOs) operate and refer children in need of mental health care.

Other centres are stated as providing community-based mental health care which suggests services beyond simply providing outpatient psychiatric treatment, with a goal of community reintegration, rehabilitation and lessening social exclusion[16]. For example, community services might include supported housing with varying degrees of supervision, partial hospitalization, local primary care medical services, day centers or clubhouses, community mental health centers, and self-help groups for mental health.[17] By this definition one can optimistically count 8 centres providing community-based mental health care, assuming that those that include occupational therapy (OT) services include goals of rehabilitation and reintegration. Three child and adolescent centres and 4 substance abuse treatment and prevention centres can be counted from the website. Table 2 shows the breakdown of ambulatory services per RHA.

Table 2: Distribution of Community-based and Outpatient Mental Health Facilities per RHA

RHA	NUMBER OF FACILITIES	SERVICES
North West	5	3 Community -based Mental Health Care and psychiatry outpatient clinic
		1 child and adolescent assessment centre and psychological testing
		1 outpatient psychiatry clinic
North Central	7	4 outpatient psychiatry clinics
		1 liaison clinic*
		1 psychosocial rehabilitation centre
		1 substance abuse treatment and prevention centre
Eastern	4	4 outpatient psychiatry clinics
South West	11	7 outpatient psychiatry clinics which include services of MHOs** and SWs† in 3 Health Centres, 3 DHFs and 1 area hospital; 1 DHF also has OT‡ services
		1 Community Mental Health Centre providing outpatient psychiatry clinics which include services of MHOs** and SWs†, substance abuse treatment, a memory clinic and

		OT‡ services)
		1 child and adolescent centre
		2 Extended Care Centres providing OT‡ services
Tobago	7	4 outpatient psychiatry clinics
		1 main outpatient psychiatry clinic which includes substance abuse treatment and a memory clinic, dialysis support group and group therapy
		1 outpatient psychiatry clinic at the general hospital which includes substance abuse treatment, psychotherapy and counselling and OT‡ services
		1 child and adolescent which includes treatment, assessment, counselling, family intervention, OT‡ and SLP∫ services

* mental health staff visits PHC centre once per week

** Mental Health Officers

† Social Workers

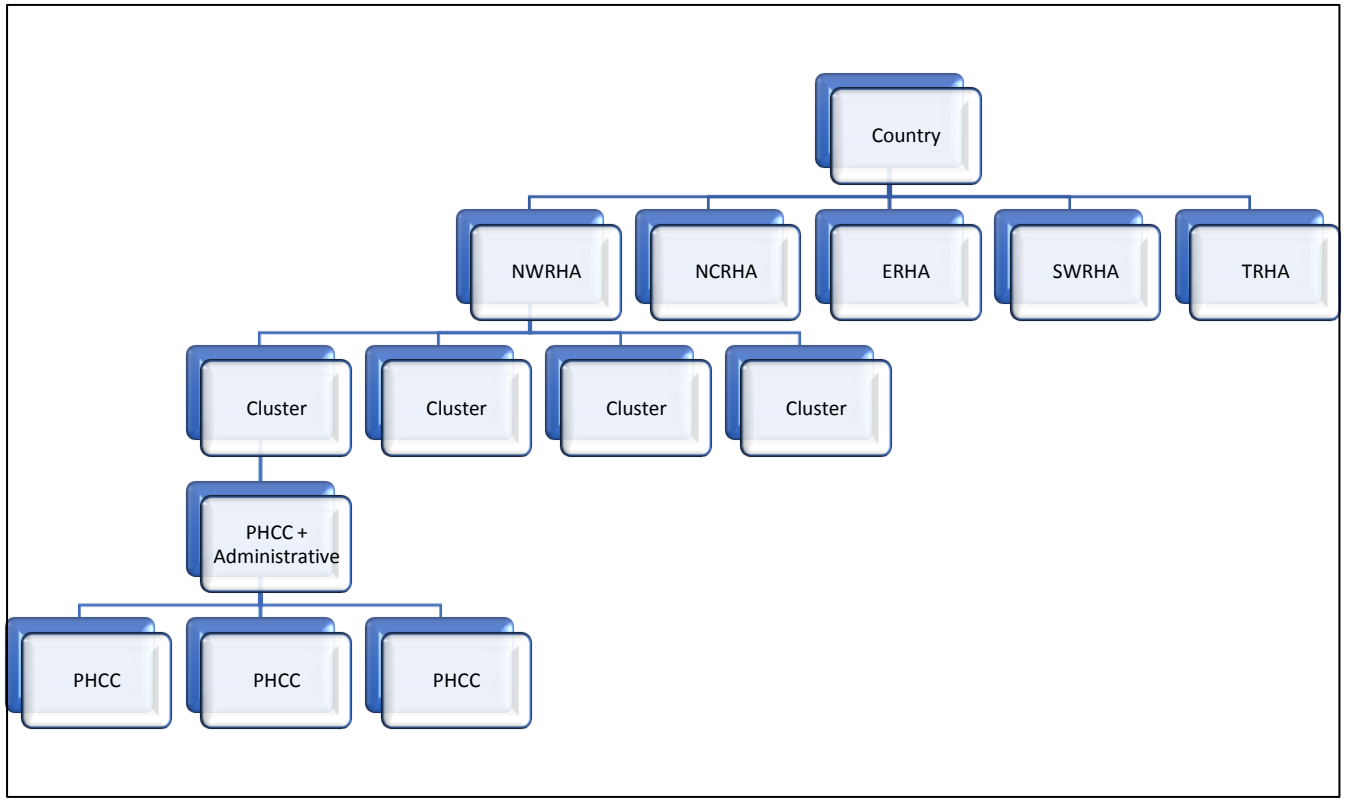
‡ Occupational Therapy

∫ Speech and Language Pathology

e. Organization of Primary Care Services

Primary care facilities are of two types: DHFs and PHCCs otherwise known as local health centres. Within each RHA, primary care facilities are organized in clusters. A cluster consists of a variable number of PHCCs. One of the PHCCs in the cluster serves an additional administrative role over the entire cluster, Figure 3.

Figure 3: Schematic of organization of primary care services



The MoH website[4] lists 9 DHFs in the country, all in Trinidad, and 96 PHCCs, 77 in Trinidad and 19 in Tobago. Table 3 shows the distribution of primary health care (PHC) facilities in the country.

Table 3: Distribution of Primary Care Facilities

RHA	DHF	PHCC/local health Centre
North West RHA	1	16
North Central RHA	3	13
East	2	16
South West	3	32
Tobago	0	19

DHFs are open twenty-four hours per day and offer Accident and Emergency and General Practice services at a minimum. The scope of services at a DHF includes:

- Pharmacy services
- Radiology (X-ray and ultrasound) services
- Dental services for children and adults at some facilities
- Specialists clinics for chronic and or lifestyle diseases

- Ante-natal and post-natal clinics
- Family Planning clinic
- Child health clinic
- Health Promotion fitness programmes

Patients must check to see what services among these are offered especially specifics around chronic or lifestyle diseases and dental services.

PHCCs provide services from 8:00 am to 4:00 pm while in some instances the closing time is 6:00 pm. They are focused on the prevention and treatment of common diseases and injuries, basic emergency services, referral to/coordination with other levels of care (such as hospitals and specialist care), primary mental health, palliative and end-of-life care, health promotion and healthy child development.

PHCCs in all 5 RHAs are stated on the MoH's website to provide ambulatory psychiatric services. The services listed for all PHCCs in all RHAs are:

Table 4: Services provided at all PHCCs in all RHAs according to MoH Website

• Antenatal Clinic	• Dental Extractions	• Hansen's Clinic	• Psychiatric Clinic
• Cervical Screening	• Diabetic Clinic	• Home Visit	• School Visits
• Child Welfare Clinic	• Dressings	• Pap Smear	• Skin Clinic
• Chronic Disease Clinic	• ECG	• Pediatric Clinic	• Wellness Clinic
• Counselling and Welfare	• Family Planning	• Postnatal Clinic	
• Dental	• General Practice	• Prenatal Clinic	

f. Training Pathways to Primary Care

Figure 4 shows a schematic of the training pathway to becoming a primary care physician or family doctor. Table 5 shows the breakdown of study requirements, highlighting all mental health training. In summary, it appears that most doctors practising in primary care would have had 3-5% of their 6-8 years of training dedicated to mental health.

Bachelor of Medicine and Bachelor of Surgery (MBBS)[18]

The first 6 years are mandatory to become an independently working general practitioner. It consists of 5 years which leads to the MBBS degree and a 1-year internship. The 5 years is divided in phases I and II, 3 years and 2 years respectively. During Phase I there is one course in

"Neurosciences and Behavior" which is very heavily biological and neurology focused. If a candidate stopped here, they would receive a Bachelor of Medical Sciences (B Sc).
During Phase II, the fourth year consists of eight-week clerkships in Medicine, Surgery, Paediatrics, Obstetrics & Gynaecology, Psychiatry and Primary Care (6 weeks). In the fifth and final year of the programme, there are additional clerkships in Public Health, Orthopaedics, Otolaryngology, Ophthalmology and Anaesthetics and Intensive Care. On successful completion of all year 4 clerkships, students must also complete a 4-week elective in an area of their choice under the supervision of an experienced consultant in a teaching hospital. They can now receive the MBBS degree.

Internship

In order to acquire full registration by the Trinidad and Tobago Medical Board, MBBS graduates must complete an Internship Programme consisting of a 12-month period of clinical rotations in the disciplines of Medicine, Surgery, Obstetrics & Gynaecology, Paediatrics for three months each at public hospitals throughout Trinidad and Tobago. The candidate is now a general practitioner and can work as such, including in primary care, or can elect to enter the Family Medicine Program if they wish to be certified as a family doctor. They can receive a Diploma in Family Medicine (additional 2 years of training), a Masters in Family Medicine (3 further years of training after obtaining the Diploma) or Doctor of Medicine in Family Medicine (4 further years of training after obtaining the Diploma)

Table 5: Pathways to becoming a primary care physician

PATHWAYS TO PRIMARY CARE	**TOTAL NUMBER OF YEARS OF STUDY**		**DEGREE OBTAINED**	**PSYCHIATRY TRAINING**
MBBS	5	Phase 1, 3 years	B Sc	4 weeks didactic
		Phase II, 2 years	MBBS	8 weeks clinical clerkship
Internship	+1		Allowed to work independently as a general practitioner	None
Diploma in Family Medicine	+2		Dip. Fam. Med.	8 weeks mental health/counselling
Masters in Family Medicine	+3		MSc	5 Optional courses of which one is Counseling Skills for

			Primary Care Physicians
Doctor of Medicine in Family Medicine	+1	DM	None unless candidates choose a project in mental health

Diploma in Family Medicine (DM)[19]

The Family Medicine Program consists of additional 2 years to obtain a Diploma in Family Medicine. There is no mental health related subject in the first year. The second year features a "Mental Health/Counselling" course of estimated length 8 weeks.

Masters in Family Medicine[19]

Upon completion of the Diploma in Family Medicine, the candidate may elect to further their studies in the Master in Family Medicine Program, an additional 3 years focussed on a research proposal. At the Master's level, core courses include:

- Research Methodology
- Statistics

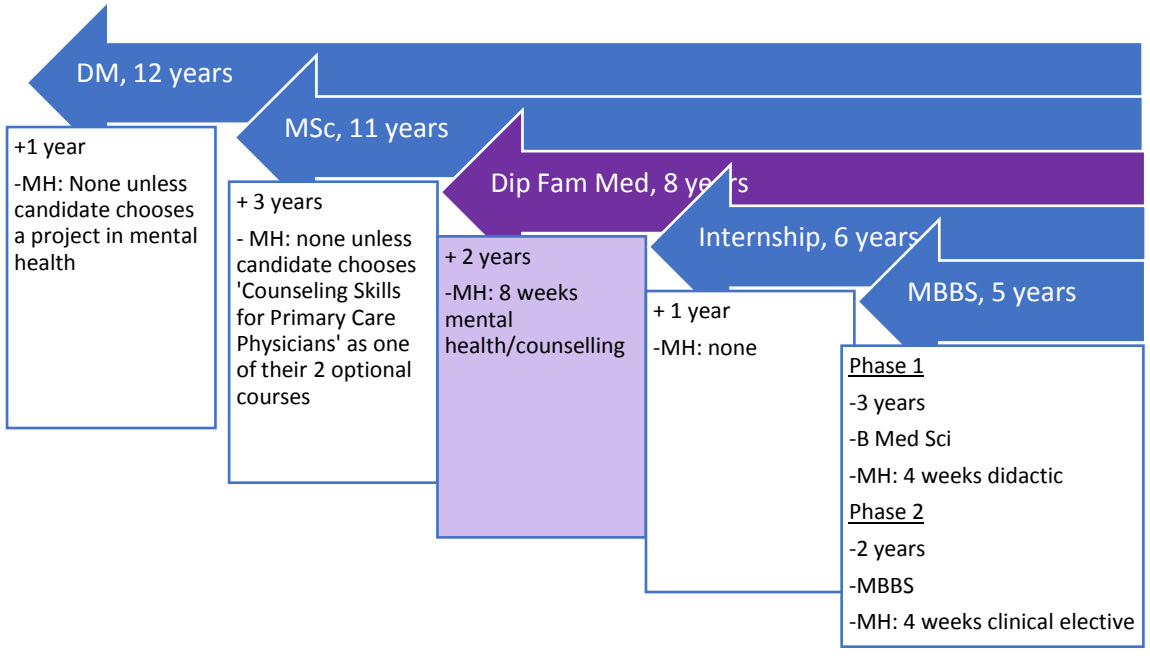
Students must also choose any 2 of the following optional courses:

- Counseling Skills for Primary Care Physicians
- Procedural Skills for Primary Care Physicians - minor surgical skills
- Management Skills for the Primary Care Physician
- Teaching and Learning in the Health Professions-an extension of the 5-week programme offered during the Diploma
- Evidence-Based Medicine Part II an extension on the 10-week programme offered during the Diploma.

Doctor of Family Medicine (DM)[19]

Students are not allowed to register for the DM in Family Medicine without first satisfactorily completing the Masters in Family Medicine. This requires a fourth year of work, during which participants are required to complete their Masters proposal. Although clinical work is a required part of the DM year, the major task is the actual data collection, data analysis and defense of the project in the final examination. University requirements also allow for an in-depth case book of at least 12 case presentations.

Figure 4: Schematic of Training Pathways to Primary Care



No data could be found, but anecdotally it appears that most doctors are at diploma level or lower. This would suggest therefore, that at most, they would have had 20 weeks of mental health training in 8 years, i.e. 4.8% of a training program in family medicine dedicated to mental health; and at the least, 12 weeks of mental health training in 6 years, i.e., 3.8% of a training program in family medicine dedicated to mental health.

g. Training Pathways to Mental Health Specialization

After completing the 5-year MBBS and 1-year Internship, candidates wishing to practice in psychiatry are required to have further completed at least six months of a Senior House Officer rotation and to be already working in a job in Psychiatry at an approved hospital before beginning the 4-year part-time programme in Doctor of Medicine in Psychiatry (DM Psychiatry).[20]

Among the key aims and objectives of the DM Psychiatry Programme are: “To produce a graduate who can function at the clinical level of a Consultant or the academic level of a Lecturer in Psychiatry; To ensure that the graduate is fully equipped to function in any Caribbean territory as a Consultant General Psychiatrist.”

Table 6: Pathways to becoming a Psychiatrist

PATHWAYS TO MENTAL HEALTH SPECIALIZATON	**TOTAL NUMBER OF YEARS OF STUDY**		**DEGREE OBTAINED**	**PSYCHIATRY TRAINING**
MBBS	5	Phase 1, 3 years	B Sc	4 weeks didactic
		Phase II, 2 years	MBBS	8 weeks clinical clerkship
Internship	+1		Allowed to work independently as a general practitioner	None
Senior House Officer Rotation	+ 0.5		Allowed to get a job in psychiatry at approved hospital	100% clinical
Job in Psychiatry at approved hospital	Ongoing: Concomitant with DM Psychiatry studies		Allowed to apply for DM Psychiatry	100% clinical
Doctor of Medicine in Psychiatry	+4 part-time while working in psychiatry at an approved hospital		DM Psychiatry	Clinical, didactic and research paper

Doctor of Medicine in Psychiatry

The program is done part-time while the candidate works at an approved hospital in the field of psychiatry. The training program is as follows:

- Part 1:
  - Year 1:
    - Basic Sciences: Neuroanatomy, Neurophysiology and Psychology
    - End of year written examination
  - Year 2
    - Candidates are assessed in Neurology and Psychiatry. The examination comprises:
      - A knowledge based examination in Neurology and Psychiatry consisting of two written papers
      - A clinical/oral examination in Neurology

        - A clinical/oral examination in Psychiatry
- Part 2
    - Year 3
        - Research Project All students must to be submitted to the Specialty Board by the end of the first semester of Year 4
        - The research project should:
            - Be produced based on cases seen and should form a distinct contribution to the knowledge of the subject presented, *or*
            - Be a formal research project on an area of interest.
            - Attain standards suitable for publication in a peer reviewed journal.
    - Year 4
        - Following acceptance of the Year 3 research project candidates are evaluated in Psychiatry. This exam consists of:
            - Two written papers
            - A clinical examination
            - An oral examination based on standardized vignettes or standardized questions

2. LITERATURE REVIEW

a. Key Highlights

Substantial literature on the topic of mental health in Trinidad and Tobago can be found on PubMed. Most of the studies have examined the following topics:

- Suicide
- Relationship of religion and ethnicity to mental illness
- Cultural and spiritual factors in mental illness
- Child and Adolescent mood disorders and suicide
- Substance abuse, homelessness, poverty
- Alcoholism and domestic violence

There are also a few studies on Depression in Chronic Disease (especially diabetes), health services[11, 21] and limited studies on occupational health mainly focussing on health care staff (medical students, nurses).

Substance use, poverty and crime are significantly inter-related and relate to higher rates of homicide in those of African descent. Mental health issues feature frequently, 5th most

predominant health theme,[22] in the local television news and newspapers but stigma is persistent and widespread. Basic psychiatry care is available mainly in the public sector but there is difficulty in managing more than basic psychiatric conditions, for example, dual diagnosis (substance use and suicide), and psychiatric care of the medically ill (consultation-liaison psychiatry). There is high prevalence in males of psychosis and substance use and in females of mood and anxiety disorders.[23] Older medications are still being used at much higher frequency than newer ones (typical antipsychotics and TCAs over SGAs and SSRIs), despite availability of newer medications.[12] Sulpiride and phenothiazines were the 2 most frequently used antipsychotics and amitriptyline was the most frequently used antidepressant in a study from November 1988 through to February 1999.[12] Polypharmacy was frequent, and was found in 83% of 132 new mental health outpatients.[12]

b. Depression

The most common reason for visit in family practice is 'check-up', joint pains, upper respiratory infections and hypertension.[24] Research on the burden of depression in family practice suggest that it is high, with one in 8 patients endorsing symptoms of a depressive disorder when screened, and about 4% endorsing suicidal ideation most of the time in the previous 2 weeks.[24] [High] rates of domestic violence are reported, frequently associated with male substance abuse, particularly alcohol. These have been found to be major determinants of depression, suicidal ideation and post-traumatic stress disorder (PTSD) in females, with a higher prevalence in the Indo-Trinidadian population.[25, 26] Conversely, family support systems were found to be associated with greater life satisfaction, more adaptive coping and moderated the effects of depressive symptoms.[27]

Depression and Diabetes

The Pan-American Health Organization (PAHO) reported a diabetes population prevalence rate of 12.7%, placing Trinidad in the top 6 countries in the Americas for high prevalence of Type 2 diabetes.[28] Not only is it highly prevalent, but research informs that it is poorly controlled and monitored, with 85% of diabetic patients having a glycosylated haemoglobin (HbA1c) level > 7% based on a public health centre sample in 2001.[29] The average prevalence of depression among patients with Type 2 diabetes mellitus was reported as 17.9% in one study based on 128 patients using the Zung scale.[30] The authors found significant correlations with female gender and comorbid medical complications.

Another study averaged the prevalence of depression in Type 2 diabetes as 26.8% based on pooled data from three independent studies in Trinidad.[31] The latter study[31] highlighted the possibility that the challenge in addressing type 2 diabetes may be in the lack of attention to

depression and called for a commitment to the WHO's recommendations for mental health integration into primary care and for more patient-centred approaches over the classic public health paradigm of population-based initiatives.

One study found a prevalence rate of 28.3% of 734 patients based on data from 4 clinics in southwest Trinidad using a modified Zung scale which had a cut-off index of 60, offering a sensitivity of only 60%,[32] quite low for a screening instrument. No significant differences were found with respect to ethnicity ($p = 0.97$) or the presence of diabetes mellitus by itself ($p = 0.34$). Independent predictors of depression ($p < 0.05$) were the level of education, the number of presenting complaints, the presence of arthritis and female gender. The author concluded by emphasizing the need for policy change in order to address mental health issues in patients attending these chronic disease clinics.

c. Suicide

Epidemiology

According to a 2001 WHO report, Trinidad and Tobago has the second highest rate of suicide (11.6/100,000 in the year 1994) amongst all the West Indian islands after Cuba (18.3/100,000 in the year 1995) and followed closely by Guyana (10.5/100,000 in the year 1994).[33] While suicide rates among Caribbean countries are variable, there is a higher incidence of suicide in males and in islands with a multi-ethnic population. The overall mean suicide rate in Trinidad and Tobago calculated for the eight-year period 1990-1997 was found to be 20.6/100,000 for the male population and 5.4/100,000 for the female population. For males, two peaks were found at the 25 to 34 and 55 to 64 age groups, and for females at the 15 to 24 and over 65 age groups.[34] Adolescent suicide rate was 2.3 times more common in males than females in the 15 to 24 age groups and overall rates were approximately 3.5 to 4 times more common in males than females.[34] Adolescent use of cannabis has been found to be strongly associated with suicidal behavior.[35]

Risk and Protective Factors

Table 7 shows a summary of factors associated with suicide in Trinidad and Tobago based on a literature review on the topic. In an analysis of 1,845 respondents aged 14 to 20 years from 24 schools across Trinidad and Tobago, religion and prayer were found to be protective, while gender, family structure and alcohol abuse were significant predictors of suicide.[369] The Indian family system was perceived as being suicide-prone with the dynamics of its family structure being a contributory factor. Alcohol abuse in the individual's family was associated with a two-

fold increase in suicidal behaviour.[36] Moreover, there is a strong association with Indo-Trinidadian ethnicity and alcohol abuse.[37,38]

Of 48 cases of suicide for the year, 39 (81.3%) were due to paraquat poisoning. The incidence of paraquat-induced suicide was 8.0 per 100,000. Among the males, 47.8% were in the age group 25-34 ($p < 0.001$), and among the females 50.0% were in the 15-24 age group ($p < 0.05$). Family-of-origin disputes were the most frequently cited precipitant, followed by marital problems. Individuals of East Indian origin accounted for 89% of the suicide victims ($p < 0.001$). When compared with suicide by other methods in the country, findings from this study confirm that paraquat poisoning is a significant means of suicide in Trinidad and that young East Indian individuals are particularly vulnerable.[39]

Studies examining risk and protective factors have repeatedly found that lover's quarrel, depression and family disputes were the most common precipitant, that suicide is more common in East Indians and poisoning by paraquat ingestion is the most common method among all races and genders.[40, 41] A study examining religiousness and suicide among 4,448 adolescents and young adults in Trinidad and Tobago found that although religiousness (measured by religious affiliation, self-perceived religiousness, attendance at religious services, prayer frequency) was in general protective against suicide, there was a higher odds ratio (OR) of being treated for suicide among the Hindu population (OR 5.81, $p < 0.05$) compared to Catholics (OR 0.63, $p < 0.05$) and Seventh-day Adventists (OR 0.47, $p < 0.01$).[42]

Table 7 – Summary of factors associated with suicide in Trinidad and Tobago

FACTOR	HIGH RISK
Gender	Males > Females
Age	Males: 25-34 and 55-64 Females: 15-24; >65
Ethnicity	Highest frequency in East Indian population
Religion	Highest Odds Ratio in Hindu population
Precipitants	Family disputes, lovers' quarrel
Associated factors	• Alcohol abuse • Domestic abuse • Low population density • Low income • Adolescent cannabis use
Most common psychiatric diagnosis	Depression

Methods

In a review on Cultural Aspects of Suicide,[43] authors Maharaj and Abdool discussed methods of suicide in Trinidad and Tobago. This is summarized in Table 8.

Table 8 – Methods of suicide in Trinidad and Tobago

COMMON METHODS OF SUICIDE	
Commonest method of death by suicide in males and females is **self poisoning** caused by the ingestion of a deadly weedicide known as paraquat or gramoxone	• An organophosphate compound • Popularly used by farmers in the rural agricultural regions • Can be purchased by anyone • There is no legislation with respect to purchasing the compound or storage at home.

The second most popular form of suicide is by **hanging**	• Forty years ago, death by hanging was the most used method of suicide in males
	• In rural areas, those associated with farming strangled themselves with rope that was utilized for tethering animals
	  ○ The rope was first smoothened with candle wax to facilitate easy movement and tied to branches of trees or the beams and ceilings of dwelling houses
	  ○ The other end was made into a noose and placed around the neck
	  ○ Death was quick due to strangulation or in some cases through broken necks due to jumping
	  ○

Drowning	• Forty years ago, death by drowning was the most used method of suicide in females
Over the last five years, there has been an increase of suicide by **gunshot wounds**	• This is due to the high level of crime within the country and the inability of the authorities to control the distribution and

	possession of illegal firearms within society
Prescription drugs **overdose**	• Commonest form of suicidal attempts among adolescents
RARE AND LESS COMMON METHODS OF SUICIDE	
Jumping	• May be due to the absence of high rise buildings
Asphyxiation through carbon monoxide poisoning	• About 1-2 per million • When reported often involves suicidal pacts of lovers in motor vehicles.
Auto-erotic asphyxiation	• Rare
Locking oneself into a deep-freeze refrigerator	• Rare
Self immolation	• No cases have ever been reported
METHODS THAT ARE ON THE RISE	
Parasuicidal attempts	• Via substance intoxication • Self-mutilation with wrist-cutting and body carvings ○ In this group, daring drug-induced behaviour can result in fatal outcomes such as drowning, jumping or accidents

d. **Spirituocultural factors**

The INTREPID study[44] identified 24 traditional and spiritual healers within the northwest region of Trinidad. They were not necessarily specialised in the treatment of mental disorders and healing was found to be provided for any health problem, including mental health, that was religiously or spiritually framed, such as attributed to “obeah.” There were no large-scale healing centres which made it difficult to fully map service provision within that catchment area. Most spiritual healers practiced within the framework of one of the many religious denominations present in Trinidad (e.g., Hindu, Muslim, Baptist, Pentecostal, and Catholic) and most were pastors or church leaders offering services to members of their congregations. Studies find that spirituocultural explanations for mental illness is still quite common with up to 32% of tertiary-level educated respondents, mostly females, in one study attributing supernatural causes to a case of schizophrenia.[45] Regardless of perceived causation, medical versus supernatural, most respondents reported that they would seek a combination of both religious and medical treatment. The authors concluded that there is “significant integration of religious and medical models of mental illness causation even in respondents who clearly

identified only one of these as the likely cause of the illness behaviour." Another study found similarly high rates of 25% of 108 pre-clinical medical students, mostly females, attributing causation of mental illness to supernatural forces.[46]

e. Other Mental Disorders

Psychosis

There is surprisingly little published research on psychosis, given that it is the most frequent reason for admission to the St. Ann's' psychiatric hospital.[11] What literature is available suggest that persons with psychosis are more likely to be male, have multiple admissions, and that psychosis is often associated with substance use, specifically cannabis[35, 47]. Studies on effect of urbanization, gender and ethnicity suggest higher incidence in males age 15-44 in urban areas, of African descent.[48,49] A study exploring the "concept of madness" in Trinidad and Tobago found that both spiritual and medical explanations of psychosis are commonly held.[50] The most common manifestation of psychosis was disturbed behavioral disturbance – wandering & running away, going about naked, violent or assaultive behavior – and auditory hallucinations.[50]

Substance Abuse

Substance abuse disorders account for a large percentage of admissions for first episode of psychiatric disorders, 43.1% in one study, of whom 56.6% had a comorbid psychiatric disorder.[51] Patients with substance abuse problems tended to be young males.[51] The most frequently abused substances in order of prevalence in Trinidad and Tobago are alcohol, cannabis and crack cocaine.[52]

There is some indication that alcohol use is more common among Indo-Trinidadians[51,52] with first exposure likely to be in the peripubertal age range, suggesting a lengthy lifetime exposure to alcohol for those who continue to drink throughout their lifetime.[53] Alcohol dependence was found to be strongly associated with major depressive disorder in the both ethnic groups in Trinidad and Tobago and it was suggested that physicians should be screening patients with alcohol dependence for depression.[54] Alcohol consumption has also been shown to be associated with the geographic prevalence of completed suicide in Trinidad.[54]

There is limited data on prevalence of cannabis use but it appears to be the next most commonly abused substance after alcohol.[51] Cannabis and other illicit drug use are reported to be more common among Afro-Trinidadians, a pattern evident from as early as adolescence.[52] It has been identified as an important precipitant of mental symptoms in Trinidad and Tobago

and its use is of growing concern in the adolescent population. A significant association has been found between cannabis use and mood disorder[55]. The same study identified other significant psychopathological effects - mild euphoria, depressive symptoms and suicidal behaviour, manic symptoms, psychotic symptoms and florid psychosis

Crack cocaine use appears to be highest in the homeless population where it is closely associated with a high incidence of HIV risk behavior, STDs, AIDS, and especially in homeless females, psychiatric illness and trading sex for crack or money.[56, 57]

f. Child and Adolescent Mental Health

Depression

There are several studies on depression in the 13-19 years age group in Trinidad and Tobago. A prevalence rate of severe depression of 9% was found on a review of 95 papers published during the period 1980 - 2005 in the English-speaking Caribbean .[58] It is strongly associated with female gender and violence in the home.[59, 60] Attendance at a religious institution, prayer with the family, intact families and attendance at prestigious schools were found to be associated with lower depression rates. Reconstituted families, alcohol abuse in the family and attendance at non-prestige schools were associated with higher depression rates.[60] By contrast the adolescent prevalence rate in Tobago was found to be lower than international and other regional data, 10%, also with a higher incidence in females.[61] The low rate in this study was attributed to the strong cultural and religious homogeneity of the sample of which 85% were Africans, 14% mixed and 1% Indians, and 90% belonged to Christian-based religions.

Suicide

The Global School-Based Student Health Survey (GSHS)[62] conducted in 2007 among 2969 students from 25 schools in Trinidad and 7 schools in Tobago highlighted that the most disturbing finding from the survey was on suicide. It showed that 21.5% of females and 14.1% of males reported that they seriously considered attempting suicide during the past 12 months. Maharaj et al[58] reported a prevalence rate of attempted suicide of 12%.

Substance Use

According to the 2007 GSHS report[62], the prevalence of alcohol use among students in Trinidad and Tobago was 42.5% with a higher prevalence in males than females. Problems with easy accessibility of alcohol from stores, shops and street vendors were

highlighted. The lifetime prevalence of drug use (marijuana and cocaine) was 13.6%. Male students (17.5%) were significantly more likely than female students (9.6%) to report lifetime drug use. The study did not detect any issues with tobacco use. In the review of health risk behaviors among adolescents aged 10 - 19 years old in the English-speaking Caribbean,[58] lifetime prevalence of substance use was reported as 24% for cigarettes and 17% for marijuana

High Risk Sexual Behaviours, STDs and Unintended Pregnancy

The 2007 GSHS report[62] showed that students were engaging in sexual activity around pubarche, with male students more sexually active than females, with23.9% of male students reporting multiple sex partners during their life. The population prevalence of gonorrhoea and/or chlamydia in 18–21-year-olds was reported to be 26% in one study.[58]

Current legislation in Trinidad and Tobago states that sexual activity is illegal under the age of 18. Legislation mandates that a physician file a police report of all pregnant mothers under the age of 18. Abortion is completely illegal in Trinidad unless there is a medical condition which is not compatible with life. Family planning, i.e. all contraceptives, is provided without cost, although availability can be problematic. The government does not consider microcephaly to be a qualifying medical condition for abortion which has raised concerns in the face of the zika virus endemic.

The high rates of sexual activity in this age group, paired with the current legislation results in a high potential for adverse mental health and psychosocial consequences.

Violence and Delinquency

The GSHS 2007 report[62] found that male students (29.1%) were significantly more likely than female students (17.3%) to miss classes or school without permission, increasing risk of deviant behaviours. A higher proportion of males, 26.6%, were involved in violence, unintentional injury, bullying, and belonging to a violent group. Males involved in physical fights and violence also had a high incidence of reporting seriously injuries. Maharaj et al[58] reported that 10% of adolescents reported carrying a weapon to school in the past 30 days. 10% endorsed almost always wanting to kill or injure someone.

3. STUDY RATIONALE AND OBJECTIVES

The literature review above shows that mental health problems are prevalent and the need to address these issues have been highlighted both in the research and in local media. There is significant stigma towards and embarrassment about mental illness, and most people suffer in

silence. Cultural and spiritual beliefs are integrated into the medical model of understanding of mental disorders. Treatment is not optimal. Content on local media raise human rights issues and concern about treatment of patients at the psychiatric hospital. Authority figures in the field of mental health acknowledge that quality of care due to a lack of qualified health professionals and dilapidated facilities can contribute to infringement of human rights and rights violations.

Decentralization of the services are slowly being taken up by the RHAs. However, PHC staff receives little training in mental health and interaction with mental health services remains rare. Consumer and family associations in mental health are in their initial stages. There remains an uneven distribution of human resources in favor of the mental hospital in the capital city. Only 3% of the Gross Domestic Product (GDP) is allocated to health. Of that, 4% is directed to mental health, and of that, 85% goes to staff salaries at the psychiatric hospital, leaving a net total of 0.02% of the GDP for all other mental health expenditures.

The WHO predicts that unipolar depression will be the second leading cause of disability in the world by the year 2020 and that the rise in number of people with mental, neurological and substance use (MNS) disorders will be particularly sharp in developing countries[63]. The Global Burden of Disease study[64] estimated that depression was the third leading cause of disability adjusted life years in Latin American and the Caribbean in 2011.

The WHO-AIMS report on Trinidad and Tobago, 2007[5], indicated that while the mental health system in Trinidad and Tobago has been largely hospital-based, efforts have been made to shift attention to community-based care for the last 10 years, but progress has been slow. Overall, the WHO AIMS report indicate that the mental health system resources are scarce and mainly centralized. The WHO recommendations for mental health systems include deinstitutionalization, community-based care and integration of mental health into primary care.[65]

The WHO-AIMS report indicated that physician-based PHC clinics are present in the country and assessment and treatment protocols for key mental health conditions are available in twenty one percent (21%) to fifty percent (50%) of physician-based PHC clinics. At least one referral per month was recorded as well as a notable increase in the interaction between primary health care physicians (PHCPs) and mental health professionals during the year preceding the AIMS assessment. Several undefined barriers, however, to mental health-primary care integration appear to persist. Based on the assessment findings, increased training of PHCPs in case detection, management and treatment was among the many recommendations from the WHO.

Health statistics report still do not appear to capture much mental health data[66] suggesting under-detection or under-reporting. The preceding Literature Review shows that regional research emphasizes that depression is more prevalent than is being recognized, and may still be largely stigmatized, undetected and hidden by sufferers from family and health care providers alike.

Following up on recommendations for deinstitutionalization, increase in community-based care and integration of mental health into primary care, the objectives of this study were to examine the depression screening practices in Trinidad in PHCCs, assess current attitudes toward mental health amongst PHCPs in Trinidad and determine need to advocate for mental health training in primary care.

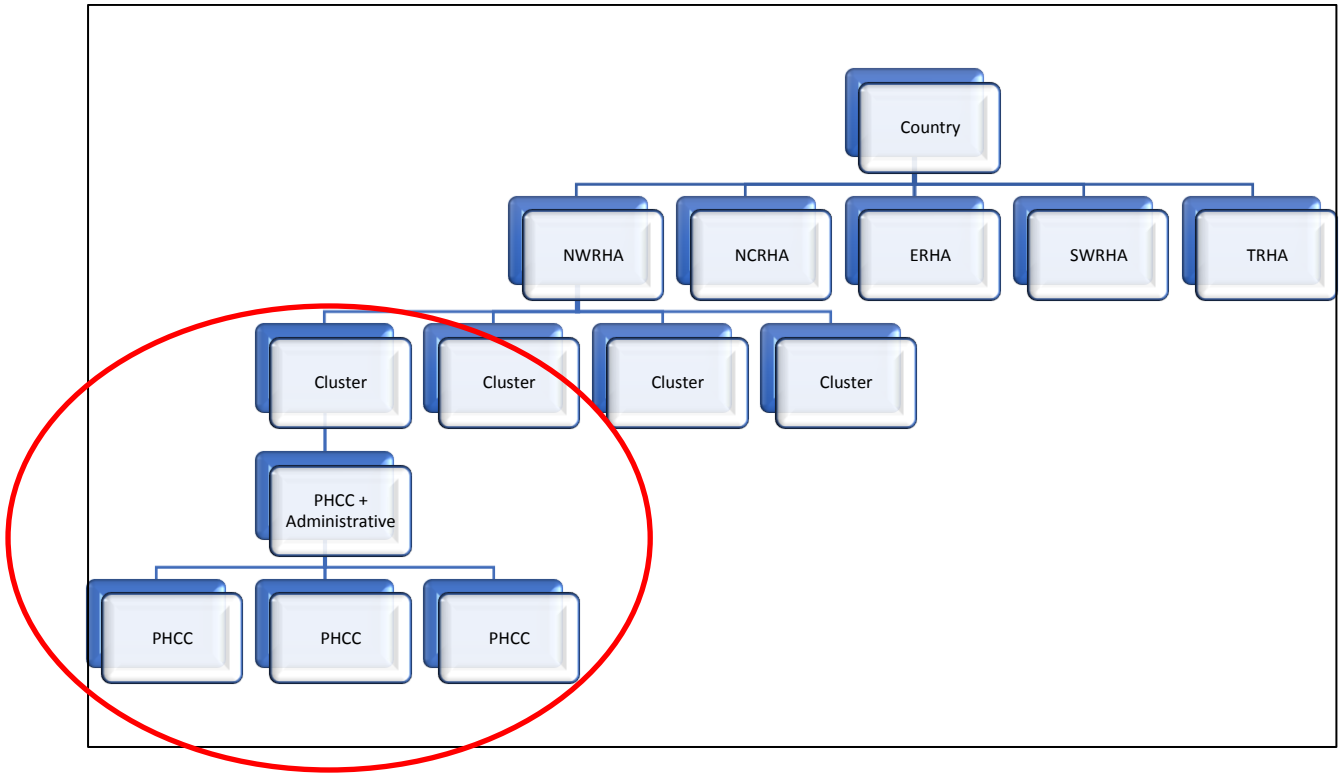
The main hypothesis is that the routine rate of screening for depression by primary care physicians is low and that attitudes towards mental health are not positive.

4. METHODOLOGY

a. Sample selection

An internet search was done to understand the layout of primary care services in order to determine how best to initiate contact with appropriate personnel to make the request for authorization to conduct the research. The MoH website produced contact information for the RHAs within which PHCCs are organized. Each RHA was contacted and a response was received from the North Central RHA. They provided an application package for the research which included ethics approval from both the Nova University and the Caribbean Public Health Agency (CARPHA). Once both ethics approvals were received, the application package was complete and submitted and permission was granted in writing from the Chief Executive Officer (CEO) of the North Central RHA to conduct the research in any or all of the 4 PHC clusters belonging to said RHA. Each of the 4 PHC clusters are in turn comprised of a number of PHC centres (Figure 3, page 18 shown again below). Due to limitations in time and budget, only one cluster from the RHA could be sampled (as shown by the red circle in Figure 3 below). The cluster was chosen based on availability of safe and reliable transportation and nearby accommodation. The chosen cluster consisted of 4 PHC centres among which 11 PHCPs worked. All PHCPs from those 4 PHCCs in the chosen cluster were invited to participate. All patients over the age of 18 being seen in their clinics were invited to participate.

Figure 3: Schematic of organization of primary care services



b. Procedures

The investigator travelled to Trinidad and Tobago once authorization to conduct the research was granted. After meeting with the PHC cluster coordinator, the roster of PHC clinics among the 4 PHCCs in the cluster was obtained. The investigator scheduled time in each of the clinics over a 2-week period as shown in Table 9.

Table 9 - Roster of PHC clinics observe in one of the four PHC clusters of the NCRHA

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
WEEK 1	Clinic: CDC Physician: A Site: Sc	Clinic: CDC Physician: B, C Site: So	Clinic: CDC Physician: D, E Site: Tc	CDC Physician: F, G Site: Mc	CDC Physician: H, I Site: Ac
WEEK 2	Clinic: ANC Physician: F Site: Ma		Clinic: CDC Physician: J Site: Tc	Clinic: CDC Physician: K Site: Sc	

CDC – Chronic Disease Clinic

ANC – Antenatal Clinic

Consent was obtained in writing from each PHCP on the first day of attendance at their clinics (Appendix A – Consent Form, Physicians). Once consent was obtained, the investigator joined the clinic as observer. At the start of each patient encounter, the PHCP introduced the investigator as a researcher who would like to talk to them for a few minutes. At that point, the consent form for patients (Appendix B – Consent Form, Patients) was reviewed and signed consent was obtained. The form was read to patients who could not read or write. Patients who were under 18 years old or who were unable to comprehend the research after reviewing the consent form or unable to understand the PHQ-2 questions were not included in the study. In cases where patients did not consent, the investigator left the clinic room and waited outside until the next patient.

PHCPs screening for depression

PHCPs were blind to the information being collected in and attempt to reduce a Hawthorne or observer effect where behavior is modified in response to the awareness of being observed. The investigator acted as observer only during each clinical encounter. Information collected included patient's age, gender, medical condition, duration of clinical encounter, literacy status, and whether or not the patient was screened for depression. Screening for depression by the physician was defined as asking about both mood and anhedonia. If only one question was asked or if general questions were asked about coping, it was recorded as not having screened for depression.

A data collection sheet (Appendix C – Data Collection Sheet) was used electronically during the clinical encounter to record this information for each patient. Patients who agreed to participate were screened for depression at the end of their appointment by the investigator using the Patient Health Questionnaire-2 (PHQ-2) (Appendix D – Patient Health Questionnaire-2) which seeks to detect the presence of either of the 2 mandatory DSM-5 and ICD-10 diagnostic criteria for a diagnosis of Major Depressive Disorder. Patients who screened positive were referred back to the PHCP with this information. At the end of the study period PHCPs were administered a mental health attitude survey (Appendix E – Mental Health Attitude Survey).

No identifying information was recorded. Physicians were coded by letter in the order they were seen. Patients were coded by number in the order they were seen. Clinic sites were also coded using a two-letter system to maintain anonymity. The study occurred over a two-week period, during which the investigator rotated amongst the 4 PHCCs and 11 PHCPs in the cluster.

c. Instruments

Data Collection Tool

Information collected included patient's age, gender, medical condition, duration of clinical encounter and whether or not they could read or write (recorded under the heading "literacy status"). An excel spreadsheet was created with these headings and the information was recorded directly onto the spreadsheet during each clinical encounter.

Patient Health Questionnaire-2 (PHQ-2)

The PHQ-2 is a shorter version of the PHQ-9. It was developed by Drs. R.L. Spitzer, J.B.W. Williams, K. Kroenke and colleagues, with an educational grant from Pfizer, Inc.[67] No permission is required to reproduce, translate, display or distribute. The PHQ-9 has been used in many studies in primary care settings, is free to users and available in English and over 30 other languages. It asks about all 9 diagnostic criteria symptoms of DSM-4 depression and serves as a screening and diagnostic tool for depression.[68] The psychometric properties of the PHQ-9 were established in studies involving 8 primary care and 7 obstetrical clinics.[69] PHQ-9 scores > 10 had a sensitivity of 88% and a specificity of 88% for Major Depressive Disorder. It has good reliability and validity[69], and internal consistency. A study involving two different patient populations produced Cronbach alphas of 0.86 and 0.89.[69] Criteria validity was established by conducting 585 structured interviews by a mental health professional.[69] Results from these interviews showed that individuals who scored high (≥ 10) on the PHQ-9 were between 7 and 13.6 times more likely to be diagnosed with depression by the mental health professional. Individuals scoring low (≤ 4) on the PHQ-9 had a chance of less than 1 in 25 of having depression.

The PHQ-2 enquires about the degree to which an individual has experienced depressed mood and anhedonia, either of the 2 mandatory diagnostic criteria for a DSM-4 or DSM-5 diagnosis of Major Depressive Disorder, over the past two weeks. It is quick and easy to administer in primary care settings. It is intended to screen as a first step, but not to establish a final diagnosis. As a screening instrument, it has high sensitivity, 97.6 and low specificity 59.2 with a cut-off score of 3/6.[70] Its psychometric properties are shown in Table 10. Patients who screen positive should then be further evaluated with the PHQ-9 to determine whether they meet criteria for a depressive disorder. The PHQ-2 has been validated in 3 studies in which it showed wide variability in sensitivity.[71]

Table 10: Psychometric Properties of the PHQ-20[70]

Major Depressive Disorder (7% prevalence)				Any Depressive Disorder (18% prevalence)			
PHQ-2 Score	Sensitivity	Specificity	Positive Predictive Value (PPV)*	PHQ-2 Score	Sensitivity	Specificity	Positive Predictive Value (PPV)*
1	97.6	59.2	15.4	1	90.6	65.4	36.9
2	92.7	73.7	21.1	2	82.1	80.4	48.3
3	**82.9**	**90.0**	**38.4**	**3**	**62.3**	**95.4**	**75.0**
4	73.2	93.3	45.5	4	50.9	97.9	81.2
5	53.7	96.8	56.4	5	31.1	98.7	84.6
6	26.8	99.4	78.6	6	12.3	99.8	92.9

*Because the PPV varies with the prevalence of depression, the PPV will be higher in settings with a higher prevalence of depression and lower in settings with a lower prevalence.

Result of the PHQ-2 was recorded per patient. A cut-off score of ≥3 was recorded as a positive screen.[75] Literate patients were invited to answer the questions themselves. Patients who were not literate were interviewed by the principal investigator using the PHQ-2.

Mental Health Attitude Survey

The attitude survey was written for use by the WHO's mental health gap action program, (mhGAP) to evaluate attitudes towards mental health by PHCPs during mhGAP training. It is meant to be used before and after mental health training of PHCPs and has been used by the principal investigator in this context[72]. Its psychometric properties have not been studied. It consists of 15 questions, with a Likert scale from 1-5, from strongly disagree to strongly agree with a score of 3 being "neutral." For the purposes of the current study, a point was given for each question to which the PHCP's response reflected a positive attitude. If a physician responded "neutral" to a question, or their response indicated a negative attitude, they were not given a point for that question. The maximum potential score was therefore 15/15, with higher scores reflecting more positive attitudes towards mental health.

A final question was asked of each physician: "I feel I need more training in mental health" using the same 5-point Likert scale. The result was presented as the fraction of the sample agreeing, disagreeing or refraining.

d. Ethical Aspects

Ethics Approval

The study was granted ethics approval from both the Nova Medical School, Nova University of Lisbon (Appendix F), and the Caribbean Public Health Agency (as required by all researchers conducting studies in Trinidad and Tobago), Appendix G.

Full Disclosure and Informed Consent

The consent forms for both physicians and patients complied with the format requested by the CARPHA Ethics Committee, who approved that the forms met their ethical requirements for use by the researcher. Consent forms for physicians and patients, Appendices 2 and 3 respectively were explicit and detailed regarding methodology and requirements of participation if consent was granted. The research proceeded only with clear consent from each patient and physician.

Explanation of Associated Risks

It was explained that there were no procedures that might cause pain and/or discomfort. It was explained that having the principal investigator sit in to the clinic for observation might be distracting to both patient and physician. The principal investigator ensured that seating was arranged so as to minimize distraction as much as possible.

It was explained that having the principal investigator sit in to the clinic might lengthen the time of the clinical encounter by several minutes in order to obtain patient consent and in order to administer the PHQ-2.

Confidentiality

Each individual PHCP was coded by a letter e.g. Physician A, B, C in the order that their clinic was first attended. Patients were assigned numbers in the order they were seen. No identifying information was recorded and no database of name with corresponding assigned number was required or created. Clinic names were coded by a 2-letter system.

The raw data has been filed in the medical clinic of the principal investigator, to whom ownership is identified. The files are kept in a locked cabinet in the private office of the principal investigator. Only the principal investigator has access to the keys. As there is

intention to submit this work for publication, once this process is complete (whether accepted for publication or not) and once it has been clarified that there is no need to re-visit the raw data for any clarifications on accurate data entry or further statistical analyses, the raw data will be shredded and discarded.

Participant Rights

The informed consent clearly stated that there is no obligation to participate, that participation was completely voluntary and that the person was completely free to refuse participation or withdraw consent at any time, and if so, it would in no way affect their normal treatment or follow up at the clinic.

Contact information was provided on the consent forms for independent advice on participant's rights as a research participant.

Positive PHQ-2 screen for Depression

It was explained that the researcher was not authorized to and will not serve any role in consultation or treatment, but that if a patient screened positive for depression on the PHQ-2, they would be referred back to their PHCP for further assessment and follow up with their consent.

e. Statistical Analysis

Descriptive statistics was used to summarize the demographic data in the sample, which was disaggregated based on gender, and then tabulated. Frequency bar graphs were used to display the age distribution, the range of medical conditions in the sample and the range of PHQ-2 scores. A cluster chart was used to graphically display the distribution of length of clinical encounters in minutes.

Screening rate was presented as a percent, representing the fraction of the sample that were screened for depression by asking, at a minimum, about both mood and anhedonia.

$$\text{Screening rate (\%)} = \frac{\text{number of patients routinely screened by PHCP}}{\text{sample size}} \times 100$$

Detection rate was presented as a percent, representing the fraction of those with a PHQ-2 > 3 that were screened positive for depression by the PHCP.

$$\text{Detection rate (\%)} = \frac{\text{no. screened positive for depression by PHCP}}{\text{no. with PHQ-2 >3}} \times 100$$

Differences in screening and detection rate by gender were analyzed using Fisher's exact test for two unpaired samples, using a 5% level of significance.

Screening by PHCPs was disaggregated by gender. Screening was displayed as a clustered column chart, one for each gender, showing rate of screening by PHCP within each PHQ-2 score.

Screening rates were stratified by patient age, patient gender, physician, medical condition, literacy status and clinic site and SPSS statistical software package version 24.0 was used to perform Chi-square analyses to determine if any relationship existed between these variables and the dichotomous outcome measure of being screened or not screened for depression. Results of the attitude survey were presented as a stacked bar chart showing percentage of positive, neutral and negative responses to each question. A cluster chart was also used to graphically display the distribution of PHCPs' scores out of the maximum possible score of 15 on the attitude survey.

Results of the response to the final question about need for mental health training was provided as a percent of the physician sample size within each response category, "yes," "no" or "neutral."

5. RESULTS

a. Demographic Data

Six PHCCs were sampled amongst 4 sites within the North Central Regional Health Authority. These included a Chronic Disease Clinic in each of the 4 sites, one antenatal clinic in one of the 4 sites and one "house office" clinic in one of the 4 sites where chronic disease patients can come in without an appointment. Eleven PHCPs and 119 patients took part in the study. Table 11 shows a summary of the sample demographics.

Table 11: Summary of the Study Sample Demographics

	Males, n=39	**Females, n=80**	**TOTAL SAMPLE, N=119**
Age (years)			
Mean, (SD)	59 (16.0)	55 (18.1)	56 (18.2)
Median	65	59.5	63
Mode	66	64	64, 66, 70
Range	21-89	19-86	19-86
Literacy Rate	28/39 (72%)	65/80 (81%)	93/119 (78%)

The age range of the sample was 19-86 years. The mean age of the sample was 56.2 years with a standard deviation (SD) of 18.2 years. The median was 63 years and the sample had three modes for age, 64, 66 and 70 years. The literacy rate of the sample was 78% (93/119).

The sample consisted of 32.8% males (39/119) and 67.2% females (80/119). The age range of the males was 21-89 years. The mean age of males in the sample was 58.7 years with a SD of 16.0 years. The median was 65 years and the mode was 66 years. Amongst males 72% (28/39) were literate.

The age range of females in the sample was 19-86 years with a mean and SD of 54.9 years and 18.1 years respectively. The median was 59.5 years and the mode was 64 years. Amongst females 81% (65/80) were literate.

The large SD demonstrate the wide range of age in the sample but the modes and median suggest that a large proportion of the sample were in their 60s. Figures 5 and 6 below demonstrate this by displaying the age distribution of the sample for males and females.

Figure 5: Age distribution, Males

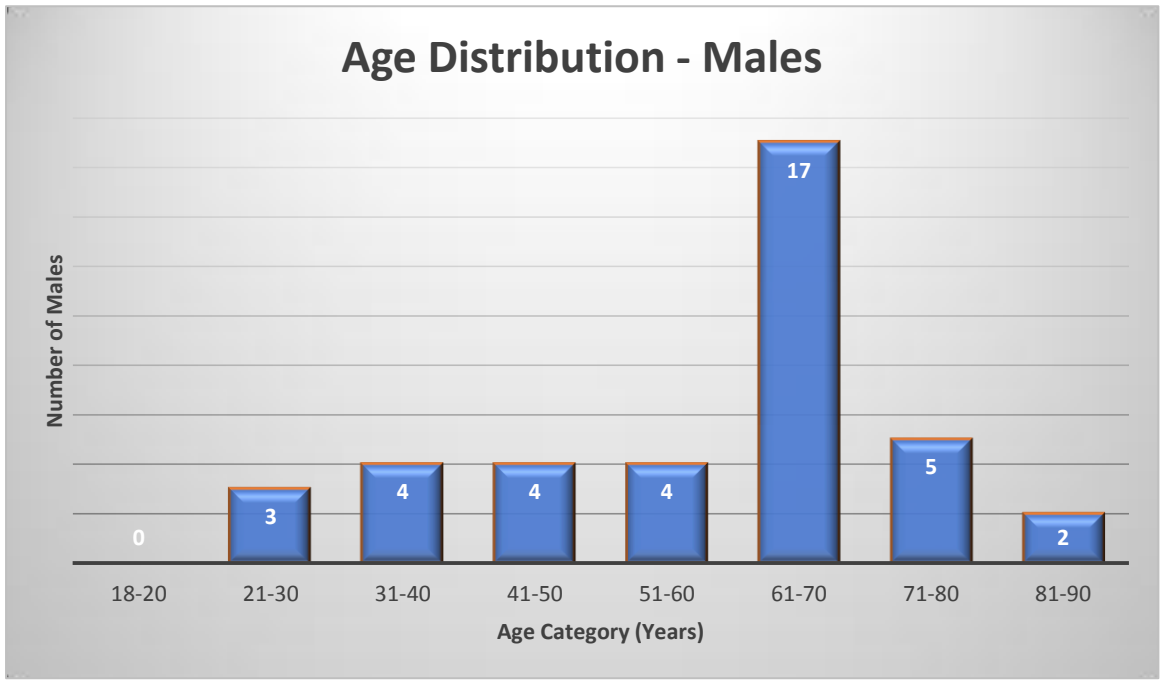
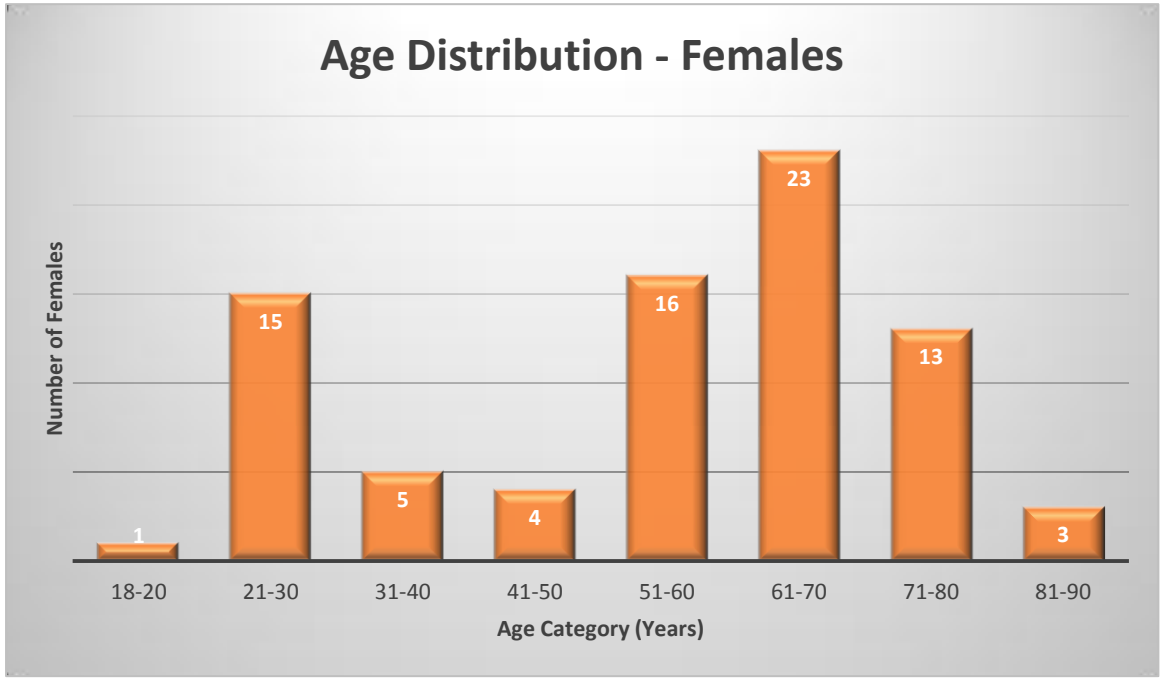


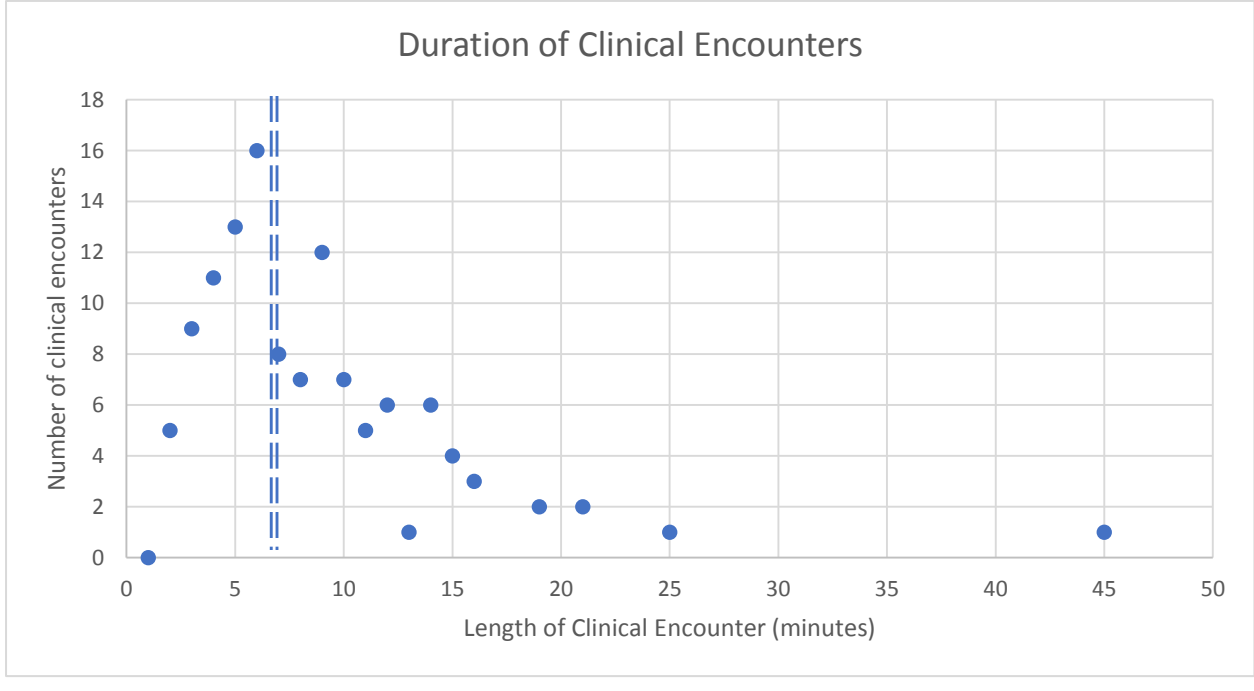
Figure 6: Age Distribution, Females



b. Duration of Clinical Encounters

Figure 7 shows the variation in length of clinical encounters by PHCPs. The mean length of a clinical encounter was 8.5 minutes with a SD of 5.6 minutes. The range was wide, 2 minutes to 45 minutes, due to one outlier. The median was 7 minutes and the mode was 6 minutes. The figure shows that more than 50% of clinical encounters (blue dotted line drawn at 60 patients, half the sample size) were less than 7 minutes in duration.

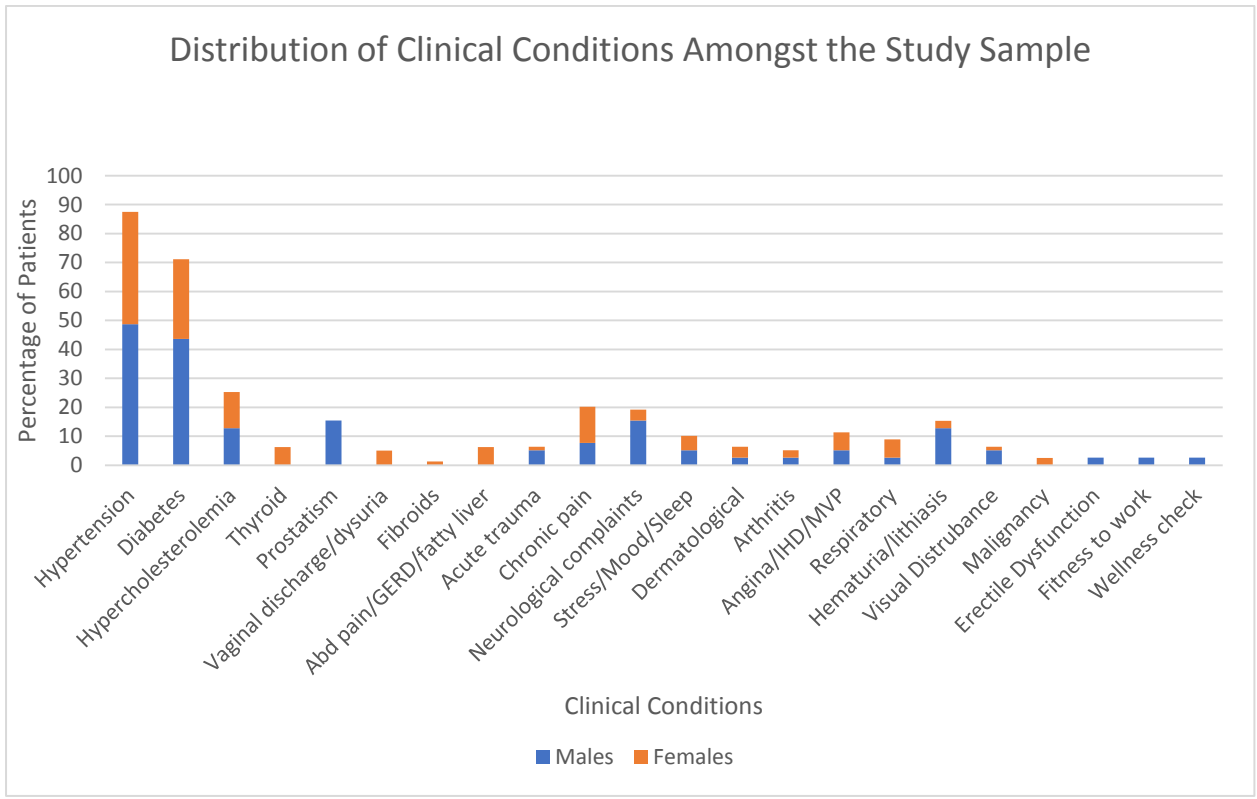
Figure 7: Duration of Clinical Encounters



c. Clinical Presentation and Reason for Visit

Figure 8 shows the distribution of clinical conditions and reasons for visit amongst the sample. The most common conditions seen were hypertension in 42% (50/119) of the sample and diabetes in 33% (39/119) of the sample. Hypertension was found in 38.8% of females (31/80) and 48.7% (19/39) of males. When gender-specific disorders and reasons for visit are filtered out (e.g. prostate gland conditions, erectile dysfunction, vaginal discharge, fibroids), all conditions were more common in men with the exceptions of thyroid disturbance, abdominal pain, chronic pain, dermatological conditions, angina, respiratory conditions and malignancy. None of these differences, however, were statistically significant. Arthritis and stress/mood/sleep complaints occurred equally between males and females.

Figure 8. Clinical conditions amongst the study sample



Abd - abdominal
GERD - gastroesophageal reflux disease
HD - heart disease
MVP - mitral valve prolapse

d. Results of PHQ-2 Screening

Table 12 shows the distribution of PHQ-2 scores and corresponding PPV for Major Depressive Disorder and Any Depressive Disorder,[71] across the whole sample. Of the whole sample 24.4% (29/119) screened positive for depression using the PHQ-2. Therefore 24.4% of the sample had a PPV of >38.4 % for Major Depressive Disorder and a PPV of >75% for Any Depressive Disorder. Of the 29 who screened positive, 16 were females and 13 were males.

Table 12: Distribution of PHQ-2 Scores Across the Sample

PHQ-2 Score	PPV for Major Depressive Disorder (7% prevalence)	PPV for Any Depressive Disorder (18% prevalence)	Females, n=80 (%)	Males, n=39 (%)	Total sample N=119 (%)
0			34 (42.5)	18 (46.15)	52 (43.7)
1	15.4	36.9	15 (18.75)	6 (15.4)	21 (17.65)
2	21.1	48.3	15 (18.75)	2 (5.1)	17 (14.3)
3	**38.4**	**75.0**	**10 (12.5)**	**7 (17.9)**	**17 (14.3)**
4	**45.5**	**81.2**	**2 (2.5)**	**2 (5.1)**	**4 (3.4)**
5	**56.4**	**84.6**	**2 (2.5)**	**2 (5.1)**	**4 (3.4)**
6	**78.6**	**92.9**	**2 (2.5)**	**2 (5.1)**	**4 (3.4)**

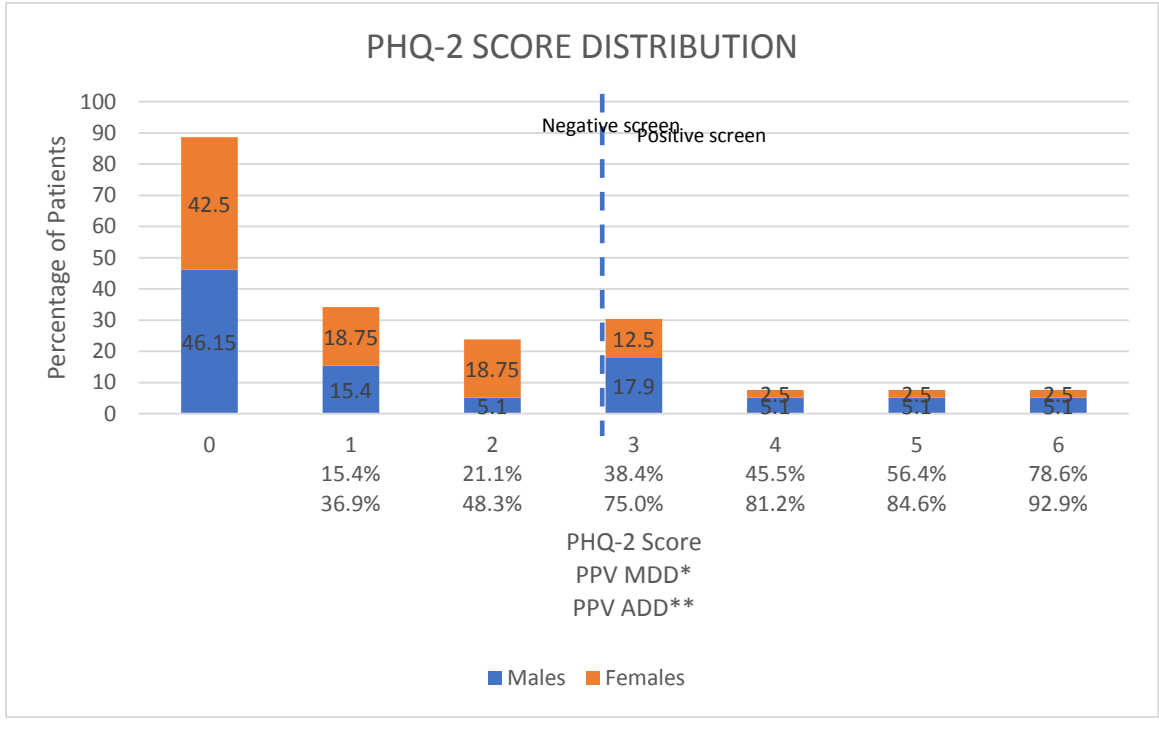
Figure 9 displays the numbers in percentages, stratified by gender. A higher percentage of males 33.3% (13/39) screened positive for depression, than females, 20% (16/80).

There were no statistically significant differences between the percentage of males and females, 33.3% (13/39) and 20% (16/80) respectively, who screened positive for depression on the PHQ-2. The Fisher exact test statistic value was 0.118839. The result was not significant at $p < .05$.

It can also be noted that among the 46 females with any PHQ-2 score > 0, 30 of them (65.2%) had PHQ-2 scores of 1-2, i.e. below the cut off value for a positive screen. Comparatively among the 21 males with any PHQ-2 score > 0, 8 (38.1%) had PHQ-2 scores below the cut off value.

There were no statistically significant differences between the percentage of males and females, 8/21 (38.1%) and 30/46 (65.2%) respectively, who had some symptoms but not sufficient for a positive screen, i.e. PHQ-2 scores of 1-2. The Fisher exact test statistic value was 0.061765. The result was not significant at $p < .05$.

Figure 9: Distribution of PHQ-2 scores across the sample (n=119)



*PPV MDD – Positive Predictive Value for Major Depressive Disorder

**PPV ADD Positive Predictive Value for Any Depressive Disorder

Patients were generally quite interested, open and receptive towards being administered or asked the questions in the PHQ-2 and most seemed relieved to have it discussed, while there were a few who appeared embarrassed about discussing their feelings and mood. Positively screened cases were conveyed to the PHCP, but some patients preferred not to discuss this with their PHCP. Patients who refused felt they could deal with it on their own and some cited stigma as a reason with remarks such as “They will think I’m mad, crazy.” Of those who were referred back to the PHCP, some were immediately referred to the mental health team in the clinic without further questioning or a diagnosis being established, one patient was asked about suicidal ideation, to which she responded negatively but she was immediately started on fluoxetine and referred to the mental health clinic without a diagnosis being established, and in others, the cases were acknowledged but no specific management or follow up occurred in the presence of the investigator.

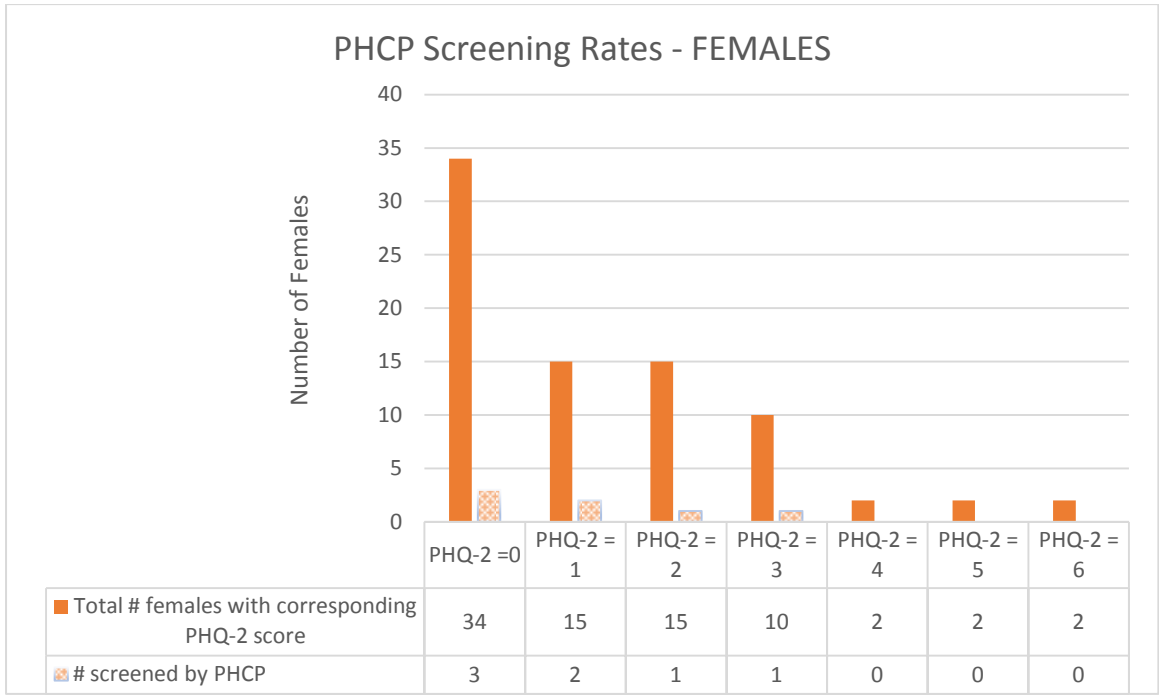
e. Depression Screening by PHCPs

Of the whole sample, 9/119 (7.6%) patients, 7 females and 2 males, were screened for depression by the PHCPs. Of the 9 patients screened by the PHCPs, 2 had a positive screen on the PHQ-2. One was male with a PHQ-2 score of 5 and had known pre-existing mental health issues and discussed it with the doctor at his appointment. The other was female with a PHQ-2

score of 3 and when she answered yes to low mood and anhedonia, she was referred to the mental health clinic but further questions to establish a diagnosis of depression were not asked.

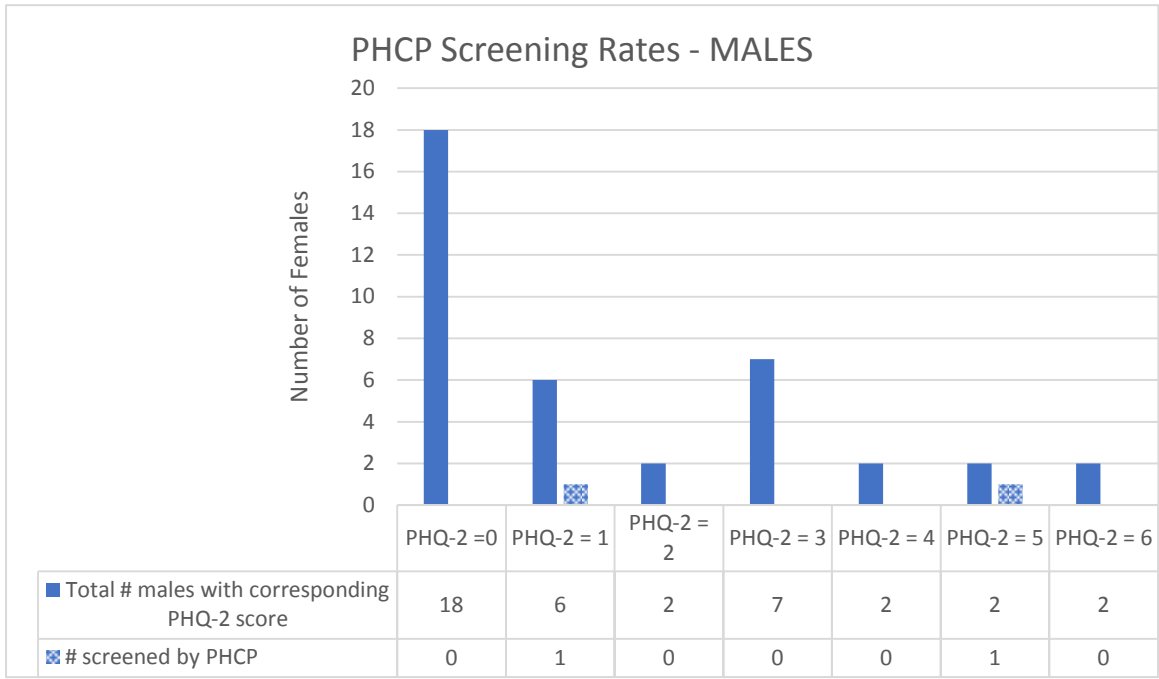
Figures 10 and 11 graphically display the depression screening rates by physicians for females and males respectively. Figure 10 shows that of the 16 females with a positive screen only 1 was screened by the PHCP. Figure 11 shows that of the 13 males with a positive screen, only 1 was screened by the PHCP.

Figure 10: Depression screening rate in females among the PHCPs



	PHQ-2 =0	PHQ-2 = 1	PHQ-2 = 2	PHQ-2 = 3	PHQ-2 = 4	PHQ-2 = 5	PHQ-2 = 6
Total # females with corresponding PHQ-2 score	34	15	15	10	2	2	2
# screened by PHCP	3	2	1	1	0	0	0

Figure 11: Depression screening rate in males among the PHCPs



There were no statistically significant differences between screening and detection rates among males and females, using Fisher's exact test.

Screening rate (%) = $\frac{\text{number of patients routinely screened by PHCP}}{\text{sample size}} \times 100$

Screening rate, total sample: $\frac{9}{119} \times 100 = 7.6\%$

Screening rate, males: $\frac{2}{39} \times 100 = 5.1\%$

Screening rate, females: $\frac{7}{80} \times 100 = 8.7\%$

Fisher exact test statistic value is 0.71607 for differences between male and female screening rates. The result is not significant at $p < .05$.

Detection rate (%) = $\frac{\text{no. screened positive for depression by PHCP}}{\text{no. with PHQ-2 >3}} \times 100$

Detection rate, total sample: $\frac{2}{29} \times 100 = 6.9\%$

Detection rate, males: $\frac{1}{13} \times 100 = 7.7\%$

Detection rate, females: $\frac{1}{16} \times 100 = 6.3\%$

The Fisher exact test statistic value is 1 for differences between male and female detection rates. The result is not significant at $p < .05$

Screening and Detection Rates

Table 13 summarizes the screening rate, results of positive PHQ-2 screen and detection rate in the sample. The depression screening rate by PHCPS was 7.6% (9/119). Screening rate per gender was 5.1% (2/39) for males and 8.7% (7/80) for females. The PHCPs detected only 2 of the 29 cases with a positive PHQ-2 screen, giving a detection rate of 6.9% (2/29). The detection rate per gender was 7.7% (1/13) for males and 6.3% (1/16) for females. The low screening rate of the PHCPs meant they missed 93% (27/29) of cases of possible depression.

Table 13: Summary of Screening and Detection Rates

		No. Males (%), n=39	**No. Females (%), n=80**	**TOTAL SAMPLE (%), N=119**
Depression screening by PHCP	*No. screened*	2 (5.1%)	7 (8.7%)	9 (7.6%)
	No. with positive screen	1	1	2
No. with positive screen on PHQ-2		13 (33.3%)	16 (20%)	29 (24.4%)
Detection Rate		1/13 (7.7%)	1/16 (6.3%)	2/29 (6.9%)

Table 14 shows the results stratified based on individual PHCP and clinic site. It shows that most doctors, (7/11) did not screen for depression at all, with only physicians A, F, I and K having screened. The highest screening rate by a physician was 33.3% (3/9), followed by 20% (3/15), 14.3% (1/7) and 9.5% (2/21).

No screening for depression happened in 3 out of the 6 clinic sites. The highest rate of screening was in site C3 where 6 out of the 24 patients (25%) seen over the 2-week study period were screened. One of the physicians working at that site was the only physician out of the 11 that had received mhGAP training. The screening rate in chronic disease clinics was 7/108 (6.5%), with 26/108 (24.1%) having a positive PHQ-2. While Doctor F in the antenatal clinic consistently enquired about if the pregnancy was planned, what supports were in place for the new mother and baby and if the father was involved, criterion symptoms of depression were not consistently asked. Depressed mood was asked on a few occasions, but anhedonia was always neglected. The screening rate in the antenatal clinic was 2/11 (18.25%) with 3/11 (27.3%) patients having a positive PHQ-2.

Table 14: Screening and Detection Rates by PHCP and by Clinic Site

	SAMPLE, N=119												**TOTAL**
SCREENING	*Site*	C1, n=20		A1, n=11	C2 n=20	C3, n=24		C4, n=14		C5, n=30			119
	No. Screened by PHCP	1		2	0	6		0		0			9
	Screening Rate by Site (%)	1/20 (5)		2/11 (18.2)	0/20 (0)	6/24 (25)		0/14 (0)		0/30 (0)			9/119 (7.6)
	Physician	H, n=13	I, n=7	F, n=11	F, n=10	G, n=10	A, n=9	K, n=15	B, n=9	C, n=5	D, n=14	E, n=3	J, n=13	
	No. Screened by PHCP	0	1	2	0	0	3	3	0	0	0	0	0	9
	Screening Rate by PHCP (%)	0/13 (0)	1/7 (14.3)	2/21 (9.5)		0/10 (0)	3/9 (33.3)	3/15 (20)	0/9 (0)	0/5 (0)	0/14 (0)	0/3 (0)	0/13 (0)	9/119 (7.6)
DETECTION	*No. with + PHQ-2 screen*	3	3	3	1	2	4	2	2	0	4	0	5	29
	No. detected by PHCP	0	1	0	0	0	1	0	0	0	0	0	0	2
	Detection Rate by PHCP (%)	0/3 (0)	1/3 (33.3)	0/3 (0)	0/1 (0)	0/2 (0)	1/4 (25)	0/2 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2/29 (6.9)
	Detection Rate by Site (%)	1/6 (16.7)		0/3 (0)	0/3 (0)	1/6 (16.7)		0/2 (0)		0/9 (0)				2/29 (6.9)

C1-5 = Chronic Disease Clinics,
A1 = Antenatal Clinic
A-K = Physician codes

Table 15 summarizes the results of the Chi-square analysis to determine any relationship between screening for depression and patient age, patient gender, individual physician,

presenting complaint/reason for visit, literacy status and clinic site. As all physicians had an overall positive score on the attitude survey, no analysis was done based on attitude. The only significant association was screening by clinic site, where the rate of screening was significantly higher in one of the chronic disease clinics and in the antenatal clinic. None of the other variables, patient age, patient gender, individual physician, presenting complaint/reason for visit and literacy status, were significantly associated with whether or not the PHCPs screened for depression.

Table 15: Results of Chi -Square Analysis - Factors Associated with Screening for Depression

Crosstabs Screening X:	**Pearson Chi-Square**			**Fisher's exact test (2-sided)**	**Phi**	
	Value	df	*p*-value		Value	*p*-value
Patient Age	8.223	7	0.313	-	0.263	0.313
Patient Gender	0.492	1	0.483	0.716	-0.064	0.483
Individual Physician	17.918	10	0.056	-	0.388	0.056
Presenting complaint / Reason for visit	22.064	22	0.456	-	0.431	0.456
Literacy Status	0.657	1	0.417	0.682	-0.074	0.417
Clinic Site	17.636	5	0.003	-	0.385	0.003

Results of Chi-square analysis to determine any factors associated with having a positive PHQ-2 screen is shown in Table 16. Relationship to age, gender, presenting complaint/reason for visit, literacy status and clinic site was explored. There was no significant association between any of the variables and having a positive PHQ-2 screen. Therefore, age group, gender, medical condition and literacy status did not predict having a positive PHQ-2 screen.

Table 16 – Results of Chi Square Analysis – Factors Associated with Positive PHQ-2 Screen

Crosstabs + PHQ-2 X:	**Pearson Chi-Square**			**Fisher's exact test (2-sided)**	**Phi**	
	Value	df	*p*-value		Value	*p*-value
Patient Age	2.348	7	0.938		0.140	0.938
Patient Gender	2.529	1	0.112	0.119	0.146	0.112
Presenting complaint	15.720	22	0.830		0.363	0.830
Literacy Status	1.895	1	0.169	0.199	0.126	0.169
Clinic Site	2.641	5	0.755		0.149	0.755

Finally, Chi-square analysis was also done to determine any significant differences in screening rates amongst the 11 PHCPs. No statistically significant differences were found (Table 17).

Table 17 – Results of Chi Square Analysis – Differences in Screening Rates among PHCPs

PHCP	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Screening Rate by PHCP (%)	33.3	0	0	0	0	9.5	0	0	14.3	0	20

Chi-Square Tests

	Value	df	*p*-value
Pearson Chi-Square	17.918	10	0.056
Phi	0.388		0.056

f. Results of Attitude Survey

The attitude survey consisted of 15 questions. For each physician, the number of questions which they answered with a positive attitude was reported as a fraction out of 15. Therefore, the higher the score out of 15, the more positive the attitude. Figure 12 shows the scores of the 11 PHCPs. It can be seen that the range of scores was 12/15-15/15 therefore reflecting an overall positive attitude towards mental health. The mean score was 13.3/15, the median was 13/15 and the mode was 13/15.

Figure 12: PHCPs' Scores on Attitude Survey

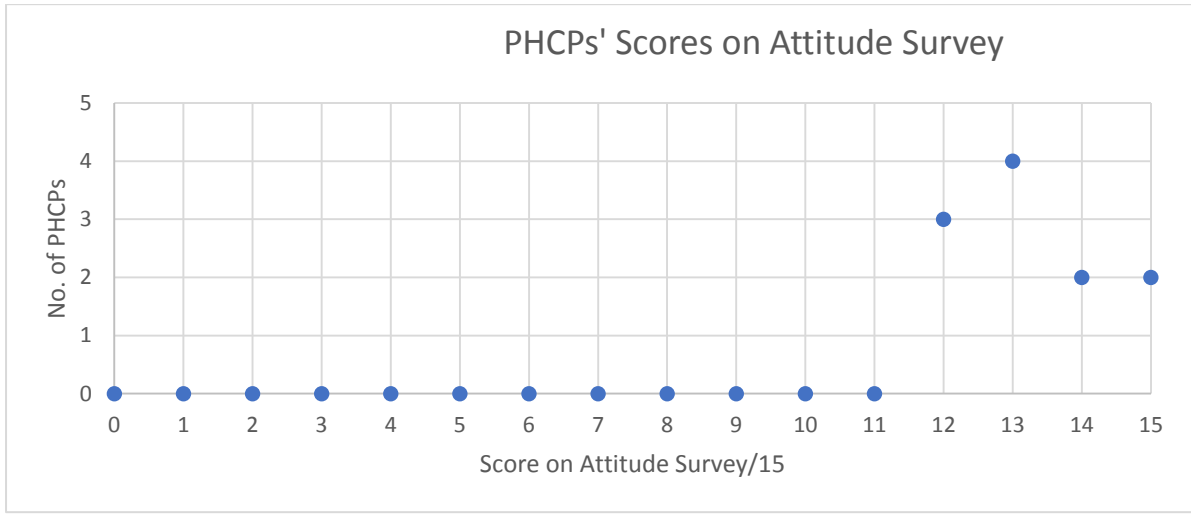
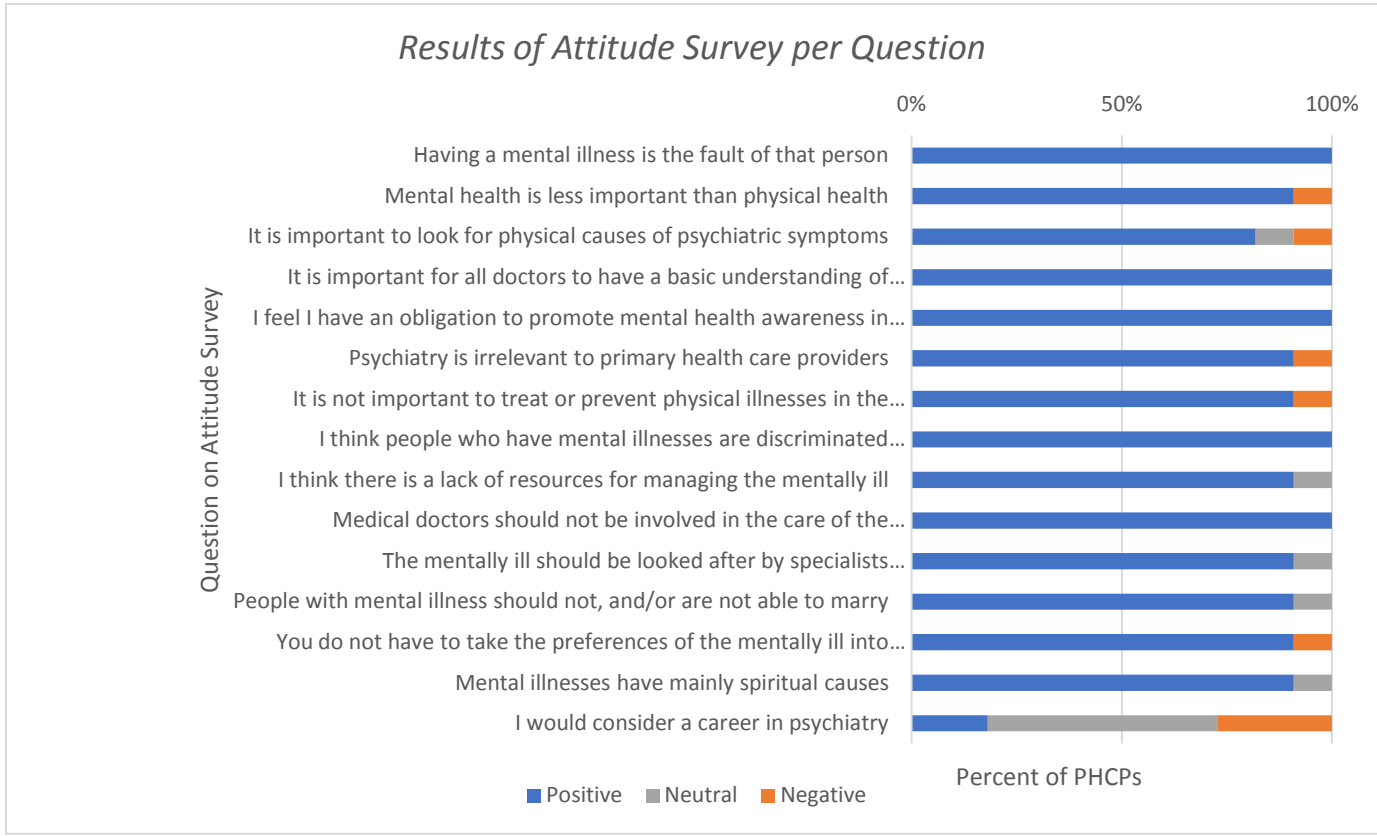


Figure 13 shows the results per question for the 11 PHCPs. It shows the percentage of responses to each question that reflected a positive, negative or neutral attitude. It shows that the majority (9/11, >80%) of the PHCPs had a response to questions 1-14 that reflected a positive attitude. The final question "I would consider a career in psychiatry" was the most contentious with <20% (only 2/11) of PHCPs agreeing. One of those 2 PHCPs saw 13 patients but screened 0 and had 1 patient with a positive PHQ-2. The other saw 15 patients, screened 3 but detected no cases while there were in fact 2 patients with a positive PHQ-2. Most PHCPs (6/11) refrained, responding "neutral" to that question, and almost 30% (3/11) disagreed with that statement.

Figure 13 – Results of Attitude Survey per Question



An additional question was asked of all PHCPS: "I feel I need more training in mental health" to which 8/11 PHCPs agreed, 2/11 strongly agreed and 1/11 was neutral. No PHCP disagreed.

6. DISCUSSION

The depression screening rate and detection rate in 5 chronic disease primary care clinics and one antenatal primary care clinic in this study were alarmingly low, 7.6% and 6.9% respectively. There is little literature on depression screening practices and mental health care delivery at a primary care level in Trinidad and Tobago with which to compare these numbers. However, the results are also compatible with North American data. A recent publication in February 2017 by the American Psychiatric Association indicated that "Despite federal recommendations for depression screening, a new national study found that less than 5 percent of adults were screened for depression in primary care settings."[73] One study in the Caribbean indicated that only 15% of cases of depression were diagnosed by primary care physicians.[74]

The investigator found no relationship between patients' demographic factors and being screened for depression by their PHCP. Literacy status, age, gender and presenting complaint were not found to have any bearing on whether or not they were routinely screened for depression. Even among the six patients who presented with complaints of stress and/or insomnia, only one was screened for depression. The only significant finding was a statistically significant difference in screening rate among the 6 clinic sites. The site that had the significantly higher rate of screening, was the site of work of one PHCP who received mhGAP training.

Additionally, the investigator found no correlation between various factors and having a positive PHQ-2 screen. This is similar to other studies in the Caribbean where no correlation was found between demographic factors and having a positive screen for depression. Studies in the Caribbean on depression among chronic disease patients and family practice patients indicate variation in demographic risk factors with significant depressive symptoms being found not only in patients with chronic, but also acute medical conditions.[75]

In the absence of well-defined predictive factors therefore, recommendations from these studies included that there should be a high index of suspicion for depression in primary care[24,76] and that patients with certain physical disorders in medical settings, should be screened for depression, including in obstetric services since post partum depression can be a significant complication of pregnancy.[77] This is compatible with the United States Preventive Services Task Force (USPSTF) recommendation[78] for routine depression screening in the "general adult population >18 years old), including pregnant and postpartum women."

Despite these recommendations, screening rates remain low and the findings from this study, where 24% (29/119) of the sample population screened positive for depression using a PHQ-2, and 93% (27/29) of those cases were missed by the PHCP due to low screening rates, reiterate the importance of a high index of suspicion and need to increase routine screening rates in primary care.

Considering that these recommendations have been made before, it would be important to understand any potential barriers to screening. Knowledge base in the field of mental health and comfort level in assessing and managing mental health problems among PHCPs need to be considered and have been cited in other studies as barriers to screening.[79]

When the investigator was invited to give a talk to the physicians at the end of the 2-week data collection period, it was noted that not all physicians were aware of the PHQ-2 and most were not aware of what should transpire in the event of a positive screen. They were all able to systematically list the 9 diagnostic criteria for depression but phenomenology, symptom elicitation and symptom attribution were not very strong. PHCPs were not familiar with the components of the Mental Status Examination. Rather they listed limited elements of the Mini-

Mental State Examination for cognitive assessment, but in the one case of cognitive complaints that was seen over the 2-week study period, the patient was immediately referred to Psychiatry with request for a Mini-Mental State Examination.

From a clinical competence perspective, in the 2 cases detected by the PHCPs in the study, management was unclear. There was no protocol or definitive next steps for investigator-screened positive cases that were referred back to the PCHP for further management. This raises an issue of risks associated with routine depression screening within systems where capacity to address depression is suboptimal.

Despite their Grade B recommendation (benefit of screening is *moderate to substantial*) on screening for depression, the USPSTF specifically qualifies that "Screening should be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up."[78] There are risks of over-diagnosis, pathologizing normal emotions, over- or inappropriate prescribing as happened in one of the 2 PHCP-detected cases in this study. A 2012 analysis[80] on the current recommendations for depression screening lists the following possible adverse outcomes: cost of introducing screening into a health care system that may already be financially challenged and is unable to effectively address cases of depression; transferring resources to screening activities might divert or affect quality of care received by patients with more severe depression with higher needs; prescribing antidepressant medications after a positive result with unnecessary exposure to side effects; "nocebo effect" – the harm associated with telling patients who are otherwise not specifically concerned about their mental health that they have depression and/or the possible development of or worsening of symptoms as a result.[81, 82]

Furthermore, there is no guideline on screening intervals in the case of negatively screened cases. The USPSTF stated "…the optimal timing of when the screening should begin and how often people should be screened are not known" and it is therefore left to clinical judgment as to when patients should be re-screened.[78]

PHCPs were observed to screen routinely for medical conditions at each appointment, for example, prostate specific antigen testing, Papanicolaou smears, diabetes screening, routine bloodwork and urinalyses, regardless of presenting complaint or reason for visit, because of learned screening guidelines and protocols in primary care. It is possible that the inclusion of mental health manualized protocols, such as the mhGAP intervention guide, and availability of simple screening instruments such as the PHQ-2 and PHQ-9 in primary care clinics might be a helpful initiative to help increase screening rates. Training in mental health, both didactic and clinical will also prove useful to increase the confidence, knowledge base and clinical expertise in basic assessment and management of mental health disorders prior to the introduction of routine screening practices. Indeed 8 of the 11 PHCPS in the study endorsed feeling a need for

more mental health training. PHCPs also volunteered that while they are allowed to prescribe psychotropic medications, they are not comfortable and familiar with it and most would refer to psychiatry to prescribe.

Time constraints has been reported as barriers to screening in other studies.[79] The average duration of a clinical encounter from this study was 8.5 minutes and it was demonstrated to the PHCPs that a PHQ-2 would take no more than an additional 2 minutes.

Other barriers have included feeling that there are activities with higher priority than depression screening, lack of available mental health resources, and discomfort addressing depression.[79, 83] Indeed comfort with or appropriateness in discussing mood and emotional symptoms seemed to play a role in the current study. These aspects however were not systematically examined in this study. While little regional literature on this phenomenon or on stigma could be found, an internet search identified numerous newspaper articles addressing the need to speak about depression and to promote education, awareness and mental health literacy in Trinidad and Tobago. PHCPs in this study voiced a need for public health education such as videos on coping, mental health and parenting skills. In one study among Hispanic populations[84] barriers to depression treatment included persistent stigma perpetuated due to inadequate disease literacy and cultural factors. Patients in that study stated fears about the addictive and harmful properties of antidepressants, about taking too many pills, and the stigma attached to taking psychotropic medications. This is similar to findings in our study where some patients who refused further evaluation after a positive PHQ-2 screen quoted stigmatized perceptions of mental illness as a reason.

Mental health training of PHCPs would offer many benefits, from increasing knowledge base, enhancing clinical competence and confidence in basic management of mental health disorders and improving treatment gap and prescribing practices. This will lay the foundation for safe advocacy of routine depression screening, and increase provider awareness of the incidence and prevalence of depression in their own practice. It is also likely to improve the status of comorbid chronic disease conditions, of which hypertension and diabetes were the most prevalent in the study population. When considering the overall status of mental health integration into PHC in Trinidad and Tobago as per the recommendations from the 2007 WHO AIMS report, de-institutionalization and shift to community-based mental health care would be difficult to implement unless such mechanisms are in place at the community level for assessment and management of basic mental health disorders. The INDEPENDENT model,[85] a collaborative care intervention in India for example aims to improve both depression and cardiometabolic disease outcomes by increasing access to mental health care in chronic disease clinics. Such approaches are well-aligned for achievement of sustainable development goals in health: “3.4 - By 2030 reduce by one third premature mortality from non-communicable

diseases through prevention and treatment and promote mental health and well-being[86] and are promising for achievement of some of the WHO Non-Communicable Diseases and Mental Health targets and strategic objectives aimed at the prevention and reduction of "disease, disability and premature deaths from chronic non-communicable diseases and mental disorders…"[87]

Overarching requirements would include political commitment health policy and budget revision. In Trinidad and Tobago, with the second highest rate of suicide in the Caribbean, the risk: benefit ratio of screening is appreciable. The lack of regional data linking suicide to a diagnosable mental health disorder begs the question of under-detection. As long as the necessary training, public health education, budgetary and political mechanisms are in place, therefore, advocating for depression screening in primary care would seem largely beneficial.

7. LIMITATIONS

The study is limited by the small sample size, especially when data were stratified. The restriction to one RHA further limits generalizability of the findings. It is therefore best considered as a small pilot project and the study protocol would need to be applied to a wider sample of PHCCs across the twin islands to produce more reliable and generalizable data. Nevertheless, findings were quite compatible with those of similar studies about depression screening rates in primary care.

Single-blindedness could not be maintained due to ethical reasons of having to inform PHCPs when their patients had a positive PHQ-2 score. In those cases, PHCPs were still not informed that administration of the PHQ-2 was part of the study protocol, but simply that the investigator did a screen for depression and their patient scored positive and would need further assessment. Only one PHCP appeared to realize and to be influenced by a Hawthorne or observer effect (behavior change in response to the awareness of being observed). It was the one PHCP who received mhGAP training and it was also the only significant result in the analysis of differences in screening rates among clinic sites. One protective factor against a Hawthorne effect despite the potential loss of blindedness is that 10/11 PHCPs were observed on only one occasion, i.e. one half-day clinic, so a second opportunity did not present itself for them to change their screening habits. In the one PHCP who was observed on two occasions, once in Chronic Disease Clinic and once in Antenatal Clinic, with screening rates of 0/10 and 2/21 respectively, there was no significant difference in the screening rates. Therefore, if blindedness affected the data, it only overestimates the screening and detection rates, which strengthens the conclusions that depression screening rates in the PHCCs are very low.

The Attitude Survey that was used is not a standardized instrument for measuring attitude and its psychometric properties are not known. The statements may be leading in the way they are phrased and therefore likely to generate a ceiling effect. Indeed, all physicians had an overall positive attitude based on this survey. These survey limitations are an important consideration in interpreting the findings, which therefore may not be a true reflection of the attitudes toward mental health among the study sample.

It was observed that some patients appeared reluctant to admit to depressive symptoms raising the question of reliability of patients' reports. If this were the case, it would only serve to increase the number that had a positive screen and therefore decrease the screening and detection rates.

Ethnicity has repeatedly been a demographic factor in mental health studies in the region and there appear to be consistent differences in various aspects of depression between the two major ethnic groups in the country. Although ethnicity was not recorded in this study, it would not change the overall results and the aims of the study regarding rates of depression, rates of depression screening in primary care and attitude towards mental health in PHCPs were still accomplished.

In retrospect, it would have been interesting to determine training level of each PHCP and to look for correlation with screening rates. With the screening rates being low across the board however, without any significant differences, it is unlikely that any relationship would have been found. It also appeared from informal conversation that they all had a similar level of training and were at Diploma level with one or two having recently started a Master's level training family medicine.

8. CONCLUSIONS

In the specific regional health authority involved in this study, the depression screening and detection rates were alarmingly low, but similar to data from similar studies in the region as well as in North America. Apart from the small sample size, study limitations mostly serve to overestimate the screening rate, thus strengthening the findings. It was determined that there is a strong need for mental health training and this was also expressed by the PHCPs. Advocating for depression screening in PHCCs can increase provider awareness of the incidence and prevalence of depression in their own practice. This can serve as an impetus for enhancement of resources, including PHCP training and collaborative mental health care, to ensure that adequate systems are in place to manage positively screened cases as per the USPSTF recommendations and to facilitate the integration of mental health care into primary care.

REFERENCES

1. UN World Population Prospects, 2013; http://esa.un.org/unpd/wpp/
2. World Health Organization, Trinidad and Tobago, Mental health Atlas Country Profile 2014.
3. Maharajh HD, Parasram R. The practice of psychiatry in Trinidad and Tobago. *International Review of Psychiatry* 1999; 11(2-3).
4. http://www.health.gov.tt/sitepages/default.aspx?id=230
5. WHO-AIMS Report on the Mental Health System in the Republic of Trinidad and Tobago, 2007
6. http://www.guardian.co.tt/lifestyle/2015-03-24/putting-some-context-mental-health-tt:
7. http://www.guardian.co.tt/news/2015-10-11/'-quarter-population-suffer-mental-illness'
8. http://www.commonwealthhealth.org/americas/trinidad_and_tobago/health_systems_in_trinidad_and_tobago/
9. http://rgd.legalaffairs.gov.tt/laws2/alphabetical_list/lawspdfs/28.02.pdf
10. http://www.trinidadexpress.com/news/MADNESS__AT_ST_ANN_S-144058796.html
11. Neehall J. An analysis of psychiatric inpatient admissions from a defined geographic catchment area over a one-year period. *West Indian Med J* 1991; 40(1):16-21.
12. Moore S, Lazara K, Jaime M, Maharajh H, Ramtahal I, Reid S, Ramsewak FS, Maharaj M. The prescribing of psychotropic drugs in mental health services in Trinidad. *Rev Panam Salud Publica 2002;* 12(3):207-14.
13. Maharajh, HD. A Proposal for Registrars and Specialist Medical Officers to be on Call at the Port of Spain General Hospital Following Closure of Ward 8. Policy statement submitted to the NWRHA from the Medical Chief of Staff Office. Archives. St. Ann's Hospital, Trinidad 1999
14. http://www.swrha.co.tt/content/mental-health
15. Maharajh HD, Abdool P, Mohammed-Emamdee R. The Theory and Practice of Consultation-Liaison (CL) Psychiatry in Trinidad and Tobago with reference to suicidal behavior. *The Scientific World Journal* 2008; 8:920-928.
16. "Community mental health services will lessen social exclusion, says WHO" (Press release). Geneva: World Health Organization press release. 1 June 2007.
17. Bentley, KJ. Supports for community-based mental health care: an optimistic view of federal legislation. *Health & Social Work 1994;* 19(4):288–294.
18. University of the West Indies, Medical Sciences Regulations and Syllabuses, Undergraduate, 2016/2017.

19. University of the West Indies, Medical Sciences Regulations and Syllabuses, Postgraduate, DM Family Medicine, 2016/2017; pp 36-37.
20. University of the West Indies, Medical Sciences Regulations and Syllabuses, Postgraduate, DM Psychiatry, 2016/2017; pp 60-62.
21. James V. Community mental health in two sectors: County Caroni and St. George East--an evaluation. *Int J Soc Psychiatry* 1986; 32(3):23-30.
22. Nichols S, Chase N. A content analysis of health research reported by the daily newspapers of Trinidad and Tobago. *West Indian Med J* 2005; 54(5):308-14.
23. Hutchinson G, Ramcharan C, Ghany K. Gender and ethnicity in first admissions to a psychiatric unit in Trinidad. *West Indian Med J* 2003; 52(4):300-3.
24. Maharaj RG. Depression and the nature of Trinidadian family practice: a cross-sectional study. *BMC Family Practice* 2007; 8:25.
25. Maharaj RG, Alexander C, Bridglal CH, Edwards A, Mohammed H, Rampaul TA, Sanchez S, Tanwing GP, Thomas K. Abuse and mental disorders among women at walk-in clinics in Trinidad: a cross-sectional study. *BMC Fam Pract* 2010; 30:11-26.
26. Krishnakumar A, Narine L, Roopnarine JL, Logie C. Sociodemographic, psychosocial and physical health correlates of common mental disorder symptoms among mothers in Trinidad and Tobago: Examining ethnic variations. *Int J Psychol* 2016. doi: 10.1002/ijop.12383.
27. Roopnarine JL, Wang Y, Krishnakumar A. Moderating Role of Social Support on the Associations between Individual Level Factors and Depressive Symptoms in Young Adults in Guyana and Trinidad and Tobago. *West Indian Med J* 2016. doi: 10.7727/wimj.2015.355.
28. Pan American Health Organization. Diabetes in the Americas. *Epidemiologic Bulletin* 2001;22(2). www.paho.org/english/sha/be_v22n2-diabetes.htm
29. Ezenwaka CE and Offiah NV. Differences in glycemic control and cardiovascular risk in primary care patients with type 2 diabetes in West Indies. *Clinical and Experimental Medicine* 2001; 1(2):91–8.
30. Frederick FT, Maharajh HD. Prevalence of depression in type 2 diabetic patients in Trinidad and Tobago. *West Indian Med J* 2013; 62(7):628-31.
31. Maharaj RG. Depression and type 2 diabetes mellitus: what we can learn from the Trinidad and Tobago experience. *Ment Health Fam Med* 2011; 8(3):133-6.
32. Maharaj RG, Reid SD, Misir A, Simeon DT. Depression and its associated factors among patients attending chronic disease clinics in southwest Trinidad. *West Indian Med J.* 2005; 54(6):369-74.
33. World Health Organisation. World Health Report, October 2001.Geneva: WHO, 2001.
34. Ameerali D. Suicide in Trinidad and Tobago. An ecological study. Thesis. St Augustine, West Indies: Faculty Med. Sci., Univ West Indies, 2002.

35. Maharajh HD, Konings M. Cannabis and suicidal behaviour among adolescents: a pilot study from Trinidad. *Scientific World Journal* 2005; 5:576-85.
36. Ali A, Maharajh HD. Social predictors of suicidal behaviour in adolescents in Trinidad and Tobago. *Soc Psychiatry Psychiatr. Epidemiol* 2005; 40(3):186-191.
37. Beaubrun MH. Treatment of alcoholism in Trinidad and Tobago, 1956-65. *Br. J. Psychiatry* 1976; 113(499):643-658.
38. Parasram R. Ethnic differences in reported rates of alcoholism in Trinidad and Tobago. Paper presented Int. Congr. Alcohol Drug Depend. Alberta, 4-10 August, 1995.
39. Hutchinson G, Daisley H, Simeon D, Simmonds V, Shetty M, Lynn D. High rates of paraquat-induced suicide in southern Trinidad. *Suicide Life Threat Behav* 1999; 29(2):186-91.
40. Hutchinson G, Daisley H, Simmons V, Gordon AN. Suicide by poisoning. *West Indian Med J* 1991; 40(2):69-73.
41. Maharajh HD, Abdool P, Mohammed-Emamdee R. The theory and practice of consultation-liaison (CL) psychiatry in Trinidad and Tobago with reference to suicidal behavior. *Scientific World Journal* 2008; 30(8):920-8.
42. Toussaint L, Wilson CM, Wilson LC, Williams DR. Religiousness and suicide in a nationally representative sample of Trinidad and Tobago adolescents and young adults. *Soc Psychiatry Psychiatr Epidemiol* 2015; 50(9):1441-50.
43. Maharajh HD, Abdool PS. Cultural Aspects of Suicide. *The Scientific World Journal* 2005; 5:736–746.
44. Morgan C, Hibben M, Esan O, John S, Patel V, Weiss HA, Murray RM, Hutchinson G, Gureje O, Thara R, Cohen A. Searching for psychosis: INTREPID (1): systems for detecting untreated and first-episode cases of psychosis in diverse settings. *Soc Psychiatry Psychiatr Epidemiol* 2015; 50(6):879–893.
45. Ramkissoon AK, Donald C, Hutchinson G. Supernatural versus medical: Responses to mental illness from undergraduate university students in Trinidad. *Int J Soc Psychiatry* 2017; 63(4):330-338.
46. Hutchinson G, Neehall JE, Simeon DT, Littlewood R. Perceptions about mental illness among pre-clinical medical students in Trinidad & Tobago. *West Indian Med J* 1999; 48(2):81-4.
47. Konings M, Henquet C, Maharajh HD, Hutchinson G, Van Os J. Early exposure to cannabis and risk for psychosis in young adolescents in Trinidad. *Acta Psychiatr Scand* 2008; 118(3):209-13.
48. Maharajh HD. Urban environment and schizophrenia. *The British Journal of Psychiatry* 2005; 187(4):387-388.

49. Maharajh HD, Konings M, Baboolal NS. Gender and ethnic differences in urban and rural first-contact schizophrenia outpatients in Trinidad. *Rev Environ Health* 2006; 21(1):69-79.
50. Cohen A, Padmavati R, Hibben M, Oyewusi S, John S, Esan O, Patel V, Weiss H, Murray R, Hutchinson G, Gureje O, Thara R, Morgan C. Concepts of madness in diverse settings: a qualitative study from the INTREPID project. *BMC Psychiatry* 2016; 16:388.
51. Reid SD, Ramcharan C, Ghany K. Substance abuse among first admissions to the psychiatric unit of a general hospital in Trinidad. *West Indian Med J* 2004; 53(2):95-9.
52. Singh H, Maharaj HD, Shipp M. Pattern of substance abuse among secondary school students in Trinidad and Tobago. *Public Health* 1991; 105:435-41.
53. Hutchinson G. Substance and Mortality. University of the West Indies Newsletter, April 2012.
54. Shafe S, Gilder DA, Montane-Jaime LK, Josephs R, Moore S, Crooks H, Ramcharam C, Ehler CL. Co-morbidity of alcohol dependence and select affective and anxiety disorders among individuals of East Indian and African ancestry in Trinidad and Tobago. *West Indian Med J* 2009; 58(2):164-72.
55. Konings M, Maharajh HD. Cannabis use and mood disorders: patterns of clinical presentations among adolescents in a developing country. *Int J Adolesc Med Health* 2006; 18(2):221-33.
56. Day M, Devieux JG, Reid SD, Jones DJ, Meharris J, Malow RM. Risk behaviours and healthcare needs of homeless drug users in Saint Lucia and Trinidad. *ABNF J* 2004; 15(6):121-6.
57. Reid SD. Drug use, sexual behaviour and HIV risk of the homeless in Port-of-Spain, Trinidad. *West Indian Med J* 1999; 48(2):57-60.
58. Maharaj RG, Nunes P, Renwick S. Health risk behaviours among adolescents in the English-speaking Caribbean: a review. *Child Adolesc Psychiatry Ment Health* 2009; 17;3(1):10.
59. Maharaj RG, Ali F, Cumberbatch K, Laloo P, Mohammed S, Ramesar A, Rampersad N, Roopnarinesingh N, Ramtahal I. Depression among adolescents, aged 13-19 years, attending secondary schools in Trinidad: prevalence and associated factors. *West Indian Med J* 2008; 57(4):352-9.
60. Maharajh HD, Ali A, Konings M. Adolescent depression in Trinidad and Tobago. *Eur Child Adolesc Psychiatry* 2006; 15(1):30-7.
61. Maharajh HD, Neuro D, Ali A. Adolescent depression in Tobago. *Int J Adolesc Med Health* 2004; 16(4):337-42.

62. Global School-Based Student Health Survey (GSHS), Trinidad and Tobago Report 2007. Pan American Health Organization, Centre for Disease Control, Ministry of Health School Health Programme
63. Mental Health. A Call for Action by World Health Ministers. World Health Organization. 54th World Health Assembly 2001.
64. Murray CJ, Lopez AD. Global mortality, disability, and the contribution of risk factors: Global Burden of Disease Study. *Lancet* 1997; 349(9063): 1436-42.
65. Improving Health Systems and Services for Mental Health, World Health Organization 2009.
66. http://www.health.gov.tt/sitepages/default.aspx?id=122. Annual statistical report 2004-2005
67. Spitzer R, Kroenke, K, Williams, J. Validation and utility of a self-report Version of PRIME-MD: the PHQ Primary Care Study. *Journal of the American Medical Association* 1999; 282:1737-1744.
68. Kroenke K, Spitzer RL. The PHQ-9: A new depression and diagnostic severity measure. *Psychiatric Annals* 2002; 32:509-521.
69. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine* 2001; 16(9):606-613.
70. Kroenke K, Spitzer RL, Williams JB. The Patient Health Questionnaire-2: Validity of a two-item depression screener. *Medical Care* 2003; 41:1284-1294
71. Gilbody S, Richards D, Brealey S, Hewitt C. Screening for depression in medical settings with the Patient Health Questionnaire (PHQ): a diagnostic meta-analysis. *J Gen Intern Med* 2007; 22(11):1596-602.
72. Ali S, Saeed K, Hughes P. Evaluation of a Mental Health Training Project in the Republic of Sudan using the Mental Health Gap Action Program Curriculum. International Psychiatry 2012; 9(2):43-45
73. American Psychiatric Association Newsroom, February 2017 http://www.psychiatry.org/newsroom/news-releases/depression-screening-rates-in-primary-care-remain-low
74. Lecrubier Y. Is depression under-recognised and undertreated? *International Journal of Clinical Psychopharmacology* 1998;13(Suppl 5):153-156.
75. Hutchinson G, Kodali S, Bruce C, Thomas C. Depressive symptoms among acute medical admissions to a general hospital. *West Indian Medical Journal* 2003; 52(Suppl 3):51.
76. Maharaj RG. The prevalence of depression among family practice patients in North West Trinidad. *West Indian Medical Journal* 2005; 54 (Suppl 2):61-66.
77. Ramesar J, Ali M, Baldeo T, Beharry C, Chong R, Maharaj V, Ramroop R, Hutchinson G. Post partum depression among Trinidadian women: Prevalence and associated risk factors. *West Indian Medical Journal* 2006; 55(Suppl 2):35.

78. Albert L. Siu and the US Preventive Services Task Force (USPSTF). USPSTF Recommendation Statement January 26, 2016 Screening for Depression in Adults. *JAMA* 2016; 315(4):380-387.
79. Angela P. Miller. Implementation Barriers of the PHQ-9 in Primary Care: A Quality Improvement Project, University of Massachusetts, Amherst, 2016.
80. Thombs BD, Coyne JC, Cuijpers P, de Jonge P, Gilbody S, Ioannidis JPA, Johnson BT, Patten SB, Turner EH, Ziegelstein RC. Rethinking recommendations for screening for depression in primary care. *CMAJ* 2012; 184(4):413-418.
81. Benedetti F, Lanotte M, Lopiano L, et al. When words are painful: unraveling the mechanisms of the nocebo effect. *Neuroscience* 2007; 147:260-71.
82. Mora MS, Nestoriuc Y, Rief W. Lessons learned from placebo groups in antidepressant trials. *Philos Trans R Soc Lond B Biol Sci* 2011; 366:1879-88.
83. Guevara JP, Gerdes M, Rothman B, Igbokidi V, Doughterty S, Localio R, Boyd RC. Screening for Parental Depression in Urban Primary Care Practices: A Mixed Methods Study. *J Health Care Poor Underserved* 2016; 27(4):1858-1871.
84. Sanchez K, Eghaneyan BH, Trivedi MH. Depression Screening and Education: Options to Reduce Barriers to Treatment (DESEO): protocol for an educational intervention study. *BMC Health Services Research* 2016; 16:322.
85. Kowalski AJ, Poongothai S, Chwastiak L, Hutcheson M, Tandon N, Khadgawat R, Sridhar GR, Aravind SR, Sosale B, Anjana RM, Rao D, Sagar R, Mehta N, Narayan KMV, Unutzer J, Katon W, Mohan V, Ali MK. The INtegrating DEPrEssioN and Diabetes treatmENT (INDEPENDENT) study: Design and methods to address mental healthcare gaps in India. *Contemp Clin Trials* 2017; pii: S1551-7144(16)30247-6.
86. World Health Organization. From MDGs to SDGs. Chapter 1, General Introduction. who.int/gho/publications/mdgs-sdgs/MDGs-SDGs2015_chapter1.pdf
87. World Health Organization. Non-Communicable Diseases and Mental Health. http://www.who.int/nmh/about/strategic_plan_3en.pdf?ua=1

APPENDICES

Appendix A
Consent Form, Physicians

CONSENT FORM – PHYSICIANS

Title of the Study: Practices in Primary Health Care
Name of Researcher: Dr. Sherese Ali
Purpose and Description:

This project aims to look at various aspects of primary care, with the hope of informing service needs. It is exploratory and qualitative in nature, not intending to prove or disprove a hypothesis, but to look at patterns of specific aspects of practice. As revealing the exact title of the research and what information is being collected will significantly invalidate the findings, a single blind protocol is being used. Therefore, if you consent, it means you agree to not know the exact title of the study nor what information is being collected until the end of the 2-week study.

Additionally, this study is being done as a requirement for successful matriculation from a Master's program in International Mental Health Policy and Services at the Nova Medical School, Lisbon, Portugal.

If you agree to participate in the study, it will entail the following;

1. You will be asked by the principal investigator for her to sit in to your clinic on 2-3 occasions for observation only with an aim for at least 10 observed clinical encounters per occasion.
2. You will be asked by the principal investigator for her to address the patient to obtain patient consent.
3. Your patient will be asked for consent by the principal investigator at the start of each encounter to sit in to the visit and to review their chart if they are a follow up patient. No need is foreseen to review the chart for new patients
4. The principal investigator will not sit in to the visit nor review the chart if the patient declines.
5. The principal investigator will use a data collection tool to record observations. You will be assigned a letter code e.g. A, B, C and so on. The data collection tool for your patients will be assigned your letter code and not your name or any other identifying information.
6. Your patient will be asked by the principal investigator to complete a 1-minute health questionnaire at the end of each clinical encounter.
7. You will be requested to complete a 5-minute survey at the end of the 2-week study period. The survey asks your opinions of certain aspects of health.

8. The principal investigator will serve no role in patient treatment or consultation.

Risks
Having the principal investigator sit in to your clinic for observation may nor may not be distracting to you. The principal investigator will arrange seating so as to minimize distraction as much as possible.

Having the principal investigator sit in to your clinic may lengthen the time of your clinical encounters by a few minutes in order to obtain patient consent and in order to administer the 1-minute patient health questionnaire.

Benefits
The data collection tool, questionnaires and surveys will all be shown to you at the end of the 2-week period and based on the results, it is hoped that helpful feedback can be given with respect to any service needs that may help serve patients in a positive way and to advocate for certain aspects of health.

Right to Withdraw or Refusal to Participate
Your participation is voluntary and refusal to participate will not impact you in any way

Confidentiality
No identifying information about you will be recorded or reported. You will be given a letter code: A, B, C and so on. Only this code will be recorded in the survey you complete and in the data collection tool.

Compensation
There is no compensation for participation in the study.

Contact Details for Researcher/Principal Investigator
If you have any questions regarding the research project you may contact the principal investigator Dr. Sherese Ali, 303-720 Spadina Ave., Toronto, ON M5S 2T9; Tel: 416 938 1278; Email: sherese.ali@neuropsychiatryconsultants.ca

Rights as a Research Participant
For independent advice on your rights as a research participant please contact the Office of the Chief Medical Officer, Ministry of Health, Tel. # 627-0010 Ext. 1617 Fax. 623-3755

Statement of DECLARATION:
Time will be given for you to consider your involvement. There is provision of space for an independent witness (not connected to the research protocol).

I have or my legal guardian has read the informed consent form, or it has been read to me, and I understand its contents. A copy has been given to me. My signature or that of my legal

RESPONDENT Name: Signature: Date:	**RESEARCHER** Name: Signature: Date:
Signature: Date:	

guardian indicates that I have agreed to participate.

Appendix B
Consent Form, Patients

CONSENT FORM - PATIENTS

Title of the Study: Practices in Primary Health Care

Name of Researcher: Dr. Sherese Ali
Purpose and Description:

This study is being conducted for a Master's Degree in International Mental Health Policy and Services at the Nova Medical School, Lisbon, Portugal. The project aims to look at various aspects of primary care service.

If you agree to participate in the study, it will entail the following:

1. You will be asked permission for me to sit in to your appointment to observe only, and on one occasion only.
2. Your age, gender, presenting complaint and length of visit will be recorded.
3. Your name or any other identifying data will not be recorded. Instead you will be assigned a number, e.g. 1, 2, 3…, in the order you are seen.
4. Your chart will be reviewed if you are a repeat visit, in order to see if you were asked certain questions by your doctor in the past. Your chart will not be reviewed if this is your first visit.
5. If there is insufficient time to review your chart right away, the number assigned to you will be written on a sticky note and stuck it at the front of your chart. Once your chart is reviewed, the sticky note will be removed. This prevents me from recording a database of your name with assigned number. In this manner, identifying information will never be recorded. Your chart will be reviewed no later than the end of that same clinic day, any sticky notes removed, and your chart re-filed as per usual protocol at the clinic.
6. You will be asked 2 questions at the end of each clinical encounter about how you have been feeling. It will take no more than 1 minute.
7. If your answer suggests that you should be assessed further, I will inform your doctor right away so that he/she can assess and treat you accordingly.
8. I am not authorized to and will not serve any role in your consultation or treatment.

Risks
It may or may not be distracting to you to have the principal investigator sit in to your visit. The principal investigator will try to minimize distraction as much as possible.

Having the principal investigator sit in to your clinic may lengthen the time of your visit by a few minutes in order to obtain your consent and in order to administer the 1-minute health questionnaire.

Benefits
Should anything be detected that requires further assessment, this will be relayed to your doctor. Also, based on the results of this study, it is hoped that helpful feedback can be given with respect to any service needs that may help serve patients in a positive way and to advocate for certain aspects of health.

Right to Withdraw or Refusal to Participate
You are under no obligation to participate and are completely free to refuse. Your participation is completely voluntary. If you wish not to participate, it will in no way affect your normal treatment or follow up at the clinic.

Confidentiality
No identifying information about you will be recorded or reported. You will be given a number code: 1, 2, 3 and so on. Only this code will be recorded in the health questionnaire you complete and in the data collection tool.

Compensation
There is no compensation for participation in the study.

Contact Details for Researcher/Principal Investigator
If you have any questions regarding the research project you may contact the principal investigator Dr. Sherese Ali, 303-720 Spadina Ave., Toronto, ON M5S 2T9; Tel: 416 938 1278; Email: sherese.ali@neuropsychiatryconsultants.ca

Rights as a Research Participant
For independent advice on your rights as a research participant please contact the Office of the Chief Medical Officer, Ministry of Health, Tel. # 627-0010 Ext. 1617 Fax. 623-3755

Statement of DECLARATION:
Time will be given for you to consider your involvement. There is provision of space for an independent witness (not connected to the research protocol).

I have or my legal guardian has read the informed consent form, or it has been read to me, and I understand its contents. A copy has been given to me. My signature or that of my legal guardian indicates that I have agreed to participate.

RESPONDENT Name: Signature: Date:	**RESEARCHER** Name: Signature: Date:
INDEPENDENT WITNESS Signature: Date:	

Appendix C

Investigator Data Collection Sheet *(with examples)*

Location	**Patient**	**Physician**	**Age (years)**	**Gender (M/F)**	**Presenting complaint**	**Duration of clinical encounter**	**Screened for Depression?**	**Results of PHQ-2**	**Literate?**	Notes

						(mins)	(Y/N)	(+/-)		
Sc	1	A	35	F	Chest pain	7	N	3	Y	Asked about mood only
Sc	2	A	40	M	Dizziness	12	Y	1	N	
So	3	B	30	F	Fatigue	8	N	1	Y	
Tc	4	C	60	M	Post-stroke follow up	5	N	2	Y	

Appendix D

Patient Health Questionnaire-2

Patient Code: (e.g. 1, 2, 3…)

PHQ-2

Over the past two weeks, how often have you been bothered by any of the following problems?

Little interest or pleasure in doing things.
0 = Not at all
1 = Several days
2 = More than half the days
3 = Nearly every day

Feeling down, depressed, or hopeless.
0 = Not at all
1 = Several days
2 = More than half the days
3 = Nearly every day

Total point score: _____

Appendix E

Mental Health Attitude Survey

Physician Code: *e.g. A, B, C, etc*.....

Date.....

Please take a few minutes to fill in this questionnaire. Please tick **one** option for each of the statements below.

1. Having a mental illness is the fault of that person

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

2. Mental health is less important than physical health

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

3. It is important to look for physical causes of psychiatric symptoms

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

4. It is important for all doctors to have a basic understanding of psychiatry

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

5. I feel I have an obligation to promote mental health awareness in the community

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

6. Psychiatry is irrelevant to primary health care providers

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

7. It is not important to treat or prevent physical illnesses in the mentally ill

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

8. I think people who have mental illnesses are discriminated against (i.e. prejudiced against because they have a mental health problem)

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

9. I think there is a lack of resources for managing the mentally ill

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

10. Medical doctors should not be involved in the care of the mentally ill

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

11. The mentally ill should be looked after by specialists (psychiatrists) only

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

12. People with mental illness should not, and/or are not able to marry

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

13. You do not have to take the preferences of the mentally ill into consideration when choosing treatment

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

14. Mental illnesses have mainly spiritual causes

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

15. I would consider a career in psychiatry

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

Additional question:

I feel I need more training in mental health

strongly disagree	disagree	neither agree nor disagree	agree	strongly agree

Appendix F

Decisão final sobre o projeto "Depression screening in Primary Health Care"

A Comissão de Ética da NMS|FCM-UNL (CEFCM) decidiu, por unanimidade, aprovar o projeto de investigação intitulado "Depression screening in Primary Health Care" (nº35/2016/CEFCM), submetido pela Dra. Sherese Ali.

Lisboa, 05 de Setembro de 2016

O Presidente da Comissão de Ética,

(Prof. Doutor Diogo Pais)

TO WHOM IT MAY CONCERN

The Ethics Research Committee NMS|FCM-UNL (CEFCM) has unanimously approved the Project entitled "Depression screening in Primary Health Care" (nr.35/2016/CEFCM), submitted by Dr. Sherese Ali.

Lisbon, September 05th, 2016

The Chairman of the Ethics Research Committee,

(Diogo Pais, MD, PhD)

Campo dos Mártires da Pátria, 130 | 1169-056 Lisboa | Portugal | **T.** +351 218 803 000 – Ext. 20447 E-mail cefcm@fcm.unl.pt

Appendix G

Ethics Approval Caribbean Public Health Agency

NORTH CENTRAL REGIONAL HEALTH AUTHORITY

OFFICE OF THE CHIEF EXECUTIVE OFFICER
3rd Floor, Building 39, Eric Williams Medical Sciences Complex, Uriah Butler Highway, Champs Fleurs PBX: (868)-225-4673 Ext: 2490 / 3089 / 5091 D.L. (868)-662-5579 Fax: (868)-663-0671

January 26th, 2017

Dr. Sherese Ali
Consultant Neuropsychiatrist
720 Spadina Avenue
Suite 303
Toronto
ON M5S 2T9.

Dear Dr. Ali,

Approval to Conduct Research Project in the NCRHA

Reference is made to the subject at caption.

Please be informed that approval has been granted for research entitled – **"Depression Screening in Primary Health Care."**

The commencement of this research indicates that you have understood and accepted the responsibility of maintaining the confidentiality of all data and information collected and processed.

The NCRHA wishes you every success in this undertaking, and looks forward to receiving a **HARD** and **SOFT** copy of your Project Report within two (2) weeks of completion.

Sincerely,

Davlin Thomas
Chief Executive Officer (Ag.)

x.c: ***Ms. Vernessar Cummings – Manager, Business Planning and Support (Ag.), NCRHA***
Public Health Observatory, NCRHA